Ernesto Treviño · Liliana Morawietz ·
Cristóbal Villalobos ·
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Intercultural Education in Chile

Experiences, Peoples, and Territories

Springer

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Ernesto Treviño

Prologue

The Meeting of Voices

Teaching as a craft, teaching as a practice, the teacher as the main actor, the students as receivers: the school, the classroom, class time, the bell, recess. Bodies, people, actions, spaces, and particular times, all part of a form of bonding that for centuries has been called the civilized way of transferring knowledge and wisdom, but, above all, disciplinary content. It is a form of learning that is specific to a type of society; planned, regulated, and strategic enculturation. It implies the specialization of teaching and, like all specializations, a separation. Specific people, spaces, and times are chosen for the function of "teaching," and we call this practice *education*.

The anthropological surprise of discovering education as a strange figure that is situated in a different space-time to that of the institutional figure. The specialist, the teacher, discovers and receives reflection from those different individuals, which tells him or her of their differences: We are not all the same, that is to say, those children speak in something I do not understand, there are gestures that I do not recognize, which mean nothing to me, nor I can translate them, because they are ambiguous. What can I do? Initially the silences, "I will not let them speak in their native language": the one that provokes me, that offends me as the one who teaches. There is only one language, that of civilization, mine; it was brought to these lands by the Spanish as a tool of conquest and colonization. But it is not only a language, but also a writing, a visual code that guides oral expression into a graphic record. Added to the inaccessibility of certain forms of orality is a written record that is a particular form of expression in an inscription made by the hand, a manual action: from language to hand. A double submission, by speech and by manual action. It alters the entire performativity of the learning process for indigenous children.

Civilization always proposes a superior language, but these schoolchildren propose—mainly to the systematizing state (which has no other alternative)—various formulas, a range of linguistic solutions in order to express themselves in association with multiple contexts of meaning.

Diversity, always active, therefore, infiltrates everything, the unitary view of teaching is disrupted. In the face of this heteroclite complexity, the modern education system is disarmed (that is to say, technically it loses the initiative and no longer attacks) and lacks ideas or systems to process and master it.

Perhaps everything begins with discovering and demonstrating the *value* of these different languages, elevating them from the classification of barbarism-primitivism to exhibit their complexity, as well as their expressive and poetic efficiency. Would this begin with someone like Rodolfo Lenz who illustrates the richness and expressive power of indigenous languages? It seems that everything starts with an recognition of that value, which extends to the person who uses it, in this case to the children in a *state of schooling*, a recognition that progressively extends to the other speakers, the family and the community, in which its sages are revealed, those who control the beautiful word.

Particularly in the context which here we call interculturality, educational efforts generally have an intention. This intentional effort follows a principle; education can have the effect of surmounting the structural inequality of a society. It is a balancing and communicating factor sought by knowledge, but it can also overcome segregation of different kinds through intercultural dialogue.

The educational process also acquires additional complexity if it is a matter of coming into contact with different ways of seeing and expressing oneself about things at school, encountering worldviews that are different, that create friction. It is a culturally *hot* environment, where everything can be transformed. It is not solely a matter of teaching content, but of recognizing subjects in terms of their particular identities, their language, and their gestures, which are constitutive of them. They are taught to discover the difference, to be different in a ritual of continuous dialogue.

Intercultural Education in Chile: Experiences, Peoples, and Territories, is a quest that proposes to highlight the need for interculturality in language and culture. With particular respect to the way in which this book is constructed, it is sufficient to point to the names of its authors: Treviño, Morawietz, Villalobos, Valenzuela, Martínez, Mondaca, Gajardo, Muñoz, Corvalán, Torres, Peña-Rincón, Blanco-Álvarez Aroca-Araujo, Rojas, Webb, Williamson, Pérez ... the Europeans; Loncón, Huencho ... the Amerindians; Haoa ... the Polynesians. The inclusion of authors from such a broad cultural spectrum engenders confidence when addressing one of the most challenging aspects of the subject of interculturality, that of teaching within it. Added to this diversity of cultural experiences is the interdisciplinary nature of the authors, which implies a double complexity: They are diverse to produce diversity, a necessary condition in order to address these issues.

Finally, the authors are not timid in their assertions; quite the contrary, they critically review the politics and policies of interculturality, as involved states and agents establish and instrumentalize interculturality in education. If "knowledge is power," politics is unavoidable if one educates. It is, therefore, a strategic field for establishing values and practices: the power of the teacher, the power of the state, and the defense of students and of their communities. All of this leads us toward resistance: resistance to the implementation of policies of interculturality in the education system, but also, resistance of these diversities, of this strangeness to dissolve in the homogenization

of the educational discipline. And against all the predictions made by the specialists several decades ago, cultural particularities and their languages are continually being redeveloped in order to persist.

And will the teacher have to share his or her forum and audience with the traditional educator? All of this is a matter of trying to connect.

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About the Editors

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Chapter 1
Introduction

Ernesto Treviño, Cristóbal Villalobos, and Liliana Morawietz

The Chilean education system is currently in a process of transition. In terms of education policy as a whole, a process of reforms has been carried out in recent years that, not without difficulties and resistance (Bellei, 2016), has sought to create institutional and organizational transformations in the education system that was implemented in the country in the early 1980s and which has remained largely untouched for more than 30 years (Bellei & Vanni, 2015; Falabella, 2015; Villalobos, 2016). At the same time, education policy focused on indigenous peoples is also going through a fascinating period of change and transformation. After almost 15 years developing a policy of Intercultural Bilingual Education (EIB, by the Spanish acronym), in 2009 the process began to implement an Indigenous Language Sector (SLI), aimed at preserving and enhancing the view of indigenous peoples in the school space in epistemological, cultural, and linguistic terms (Treviño et al., 2012).

Considering this scenario, "*Intercultural Education in Chile. Experiences, Peoples, and Territories*" seeks to contribute to the intellectual, social, and political discussion on the current state of intercultural education in the country, generating reflection and analysis that will enable educational communities, decision-makers, academics, and researchers, as well as civil society in general, to propose improvements to intercultural bilingual education policies and programs in the short, medium,

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and long term. In a nutshell, the goal is to create debate on the inclusion, recognition, and appreciation of cultural differences in education, recognizing the advances and challenges of the policies and research developed in recent years.

Like every publication, "*Intercultural Education in Chile. Experiences, Peoples, and Territories*" has its own distinctive identity. Although 23 researchers from various institutions, of diverse nationalities and ethnicities, have participated in the creation of this book, it is organized around three common interpretative approaches, that, seen as a whole, provide coherence to the text within a multiplicity of interpretations, methodologies, and perspectives of analysis. One of the prime characteristics of the book is its multidisciplinary nature. The various chapters thus use different research approaches, drawing on disciplines such as history, anthropology, sociology, or pedagogy to examine various aspects of Chilean intercultural education. Secondly, the work analyzes an assortment of indigenous peoples, without focusing on any specific group. In some cases, this translates into the analysis of indigenous students as a whole, but in others it involves a focus on a particular people, such as the *Rapa Nui*, *Aymara*, or *Mapuche*. Finally, the book comprises different levels in addressing the indigenous issue. It thus recognizes that education policy involves different actors, ranging from national governments to local communities.

"*Intercultural Education in Chile. Experience, Peoples, and Territories*" is divided into 12 chapters, including this introduction. Chapter 2, entitled "*Intercultural Education in Chile: A Discussion Map*", written by Liliana Morawietz, Ernesto Treviño, and Cristóbal Villalobos, develops a conceptual description of the main elements and notions on which the book is structured. As its title indicates, it maps the situation of intercultural education in Chile, examining the historical changes that have taken place in the sector and the main challenges for the current moment in history. According to this description, the authors detail the three main conceptual proposals of the book: (i) the diversity of cultures, (ii) multidimensionality, and (iii) multidisciplinarity. It is in this way that they explain how the text approaches the study of intercultural education in the country.

The remaining 10 chapters comprise the fundamental corpus of the book, and they are organized into three sections. The first of these, "*Intercultural Education Policies in Chile: Context, Perspectives, and Evidence*", includes four articles that describe the situation of the country's various indigenous populations and their relationship with education systems, based on common, comparative, historical, empirical, and philosophical perspectives of the challenges and projections for these people, particularly in areas such as social inequality, educational segregation, and the folklorization of indigenous peoples.

Chapter 3, written by Ernesto Treviño, Esteban Villalobos-Araya, and Felipe Godoy, which is entitled "*Learning Inequalities Between Indigenous and Non-Indigenous Children: The Bridge Between School and Families to Promote Quality*", addresses one of the most frequently studied issues regarding the indigenous population (namely, the processes of educational inequality to which the region's indigenous children are exposed) from a comparative perspective. Using statistical information provided by the Second Regional Comparative and Explanatory Study (SERCE, by the Spanish acronym) of the Latin American Laboratory for Assessment of the

Quality of Education (LLECE), the study investigates the main factors that would explain the inequality between indigenous and non-indigenous students at different learning levels in Latin America.

Chapter 4, written by Elisa Loncón and entitled "*The Educational and Language Policy Demands of the Indigenous Peoples of Chile: A View from the Perspective of Linguistic Rights*", addresses the discussion of indigenous education policy in Chile, looking more deeply into the relationship between ethnicity, language, and the education system. Through a review of the major milestones and transformations of indigenous policy in the country in recent decades, as well as an examination of the principal agreements and treaties signed by different governments in this area, the author outlines the most important strengths and advances, and critical problems, weaknesses, and perspectives of intercultural education for the short and medium term, with a special emphasis on linguistic challenges.

Chapter 5, which is written by Ernesto Treviño, Juan Pablo Valenzuela, and Cristóbal Villalobos, is called "*Segregation of Indigenous Students in the Chilean School System*". In this chapter, the authors examine the extent of the processes that might explain the isolation or segregation of indigenous groups in schools in the Chilean school system. Using a quantitative methodological approach and building of specific indices of segregation, they analyze the patterns of segregation and its relationship with other types of inequality, such as socioeconomic and academic inequalities. The results of this research enable reflection on indigenous status as an additional factor in the process of inequality and inequity, and also provide evidence on the effect of territory in the organization of the country's school system.

Finally, Chapter 6, entitled "*Reflections on Intercultural Education in Chile and the Worldview of Indigenous Peoples*", written by Ximena Martínez, addresses the issue of intercultural education, mainly in terms of philosophical and epistemological aspects. Certain definitions and clarifications are thus set out regarding the decolonizing nature of intercultural education, problematizing the notion of "otherness" as a concept that serves the cultural reproduction of Western hegemony. Based on this conceptual framework, the history of the Intercultural Bilingual Education Program (PEIB, by the Spanish acronym) in Chile is critically reviewed, examining its scope, limitations, and challenges.

The second section is entitled: "*Development of Indigenous Peoples: History and Particularities*". Combining historical approaches with analyses based on other social sciences, it addresses the historical characteristics and particularities of two specific indigenous peoples in Chile that have rarely been explored until now: the *Aymara* and the *Rapa Nui*. This section thus makes it possible to look more closely at the knowledge of education for certain peoples, providing specific information on their development and particularities.

Chapter 7, entitled "*Intercultural Bilingual Education Among the Aymara People of Northern Chile: Approaches and Historical Dynamics in its Implementation*", written by Carlos Mondaca, Yeliza Gajardo, and Wilson Muñoz, delves into the historical relationship between a territorial-geographical space (northern Chile) and an indigenous people (the Aymara). By studying the particularities according to which indigenous policy is established in border areas, the authors look into the

potential and the limitations of the implementation of intercultural bilingual education in this space, making it possible to see how a systematizing policy standard has been imposed regarding cultural diversity in the educational space.

Chapter 8, by Javier Corvalán and Sara Joiko, is entitled "*The Rapa Nui Language Among High School Students on Easter Island: Level of Self-Reported Proficiency in Relation to School and Ethnic Variables*". It examines and analyzes the level of *Rapa Nui* language proficiency among students on the island, investigating the influence that school (such as the type of school funding), family (the *Rapa Nui* ancestry of the parents), and contextual factors (use of the language at home) might have on these levels of proficiency. It thus develops reflections on the linguistic characteristics of *Rapa Nui* language learners in the context of an educational system that has been radically transformed in recent decades.

Chapter 9, entitled "*Education, Indigenous Peoples, and Interculturality from Rapa Nui / Ka Ma'a Te Mau o Te Kãiŋa*", written by María Virginia Haoa, Paulina Torres, and Camila Zurob, concludes this section. The authors address the development of processes of interculturality in the world's most isolated school. Using an historical study, which gives an account of the major milestones of educational development on Easter Island, critical points and important strengths are established for the design of processes to revitalize the *Rapa Nui* language, investigating the interaction between central and local agents for the implementation of this policy.

The third section is called: "*Teaching Processes in Intercultural Spaces: Communities, Learning, and Cultures*". The chapters in this section explore how different knowledge, skills, and competencies are incorporated in spaces of intercultural education. It includes analyses that contain studies on learning in ethnomathematics and cultural environmental education, developed especially through processes of interaction between the school and local communities.

Chapter 10, written by Pilar Peña-Rincón, Hilbert Blanco-Álvarez, and Armando Aroca-Araujo, is entitled "*Incorporating Indigenous Mathematical Knowledge into the Education Systems of Colombia and Chile*". Based on a conceptual framework that discusses the relationship between intercultural education and mathematical knowledge, the authors carry out a comparative analysis between the two countries, studying the legal and administrative regulations that underpin the implementation of intercultural education projects, before describing the educational institutions that address indigenous mathematical knowledge.

Chapter 11, called "*Intercultural Mathematical Education: Proposals and Projections from the Mapuche People*", is authored by Anahí Huencho, Francisco Rojas, and Andrew Webb. In view of the need to develop a different perspective of mathematical learning that recognizes and values the cultural relationships of schools, the authors describe a teaching alternative that emerges from the being and knowing of the *Mapuche* people. In accordance with this experience, they reflect on the main challenges and projections of intercultural education, particularly from the perspective of full inclusion, a viewpoint that allows energization of the relationships between intercultural education and mathematics in the country.

Finally, Chapter 12, written by Guillermo Williamson and Isolde Pérez, called "*Crafts of the Earth: Dialogue of Knowledge in Intercultural Environmental Education*", describes an intercultural environmental education initiative developed in a community space in Chile, describing its particularities, projections, and challenges. It outlines the connections and critical problems between intercultural learning and environmental education, enabling reflection on the curricular, methodological, and didactic elements that are involved in the development of this topic.

This book is the result of the efforts of a group of academics from various disciplines who are interested in understanding the challenges of bilingual intercultural education in Chile from different perspectives. The richness of the volume is specifically due to this multiplicity of views on the phenomenon of diversity and the education of native peoples, as well as the rigorous and patient work of the authors who collaborated to produce this work. The publishers would like to express their most sincere gratitude to all of them.

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Chapter 2
Intercultural Education in Chile: A Discussion Map

Liliana Morawietz, Ernesto Treviño, and Cristóbal Villalobos

2.1 Introduction

This first chapter addresses three distinct aspects of Bilingual Intercultural Education (EIB, by the Spanish acronym). The first section provides a brief overview of the recent history of EIB during the last two decades in Chile, outlining its main policies and describing the major milestones and advances, as well as its various challenges, in order to demonstrate the development path that EIB has followed in the country.

The second section reviews the two central contributions to this text. As stated above, on the one hand, the chapters look at the academic research that can encourage discussion about the education of native peoples in the coming years. On the other hand, the book aims to use a variety of evidence to contribute to the formulation, improvement, and assessment of education policies aimed at native peoples, taking into consideration the dynamism of the education system and the institutional transformations seen in recent years.

The third section makes explicit the rationale used to shape this book. The perspective of Chile as a multicultural nation is the first rationale, with this concept being understood as that of a society where different cultures coexist and interact through dynamic processes that depend on the context. From this perspective, native peoples

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are an important part of this cultural mosaic, where different cultures meet and relationships exist that are characterized by implicit and explicit exchanges, tensions, and negotiations between distinct cultural identities (Council of Europe, 2009). The multidimensionality of educational policy is the second rationale used in the selection of the chapters that make up this book. This is based on the idea that public policy for native peoples should be built and cultivated from different spheres of action, reflecting the practices and experiences of the country's different cultural and ethnic groups. The third rationale on which this book is based is multidisciplinarity, which focuses on observing cultural and educational phenomena from various multidisciplinary and transdisciplinary perspectives, without being limited to understanding the problems of indigenous peoples from any particular discipline. It thus seeks to recognize the existence of spheres of interaction at the intersection of educational processes, understood as forms of socialization that are strongly rooted in culture, as well as outlining their general magnitude and the trends they show.

2.2   Recent History of EIB

In Chile, the development of intercultural bilingual education in the national school system began to take shape with the return to democracy in 1990. Thus, and in response to the political demands of indigenous organizations, movements, and individuals, which were being expressed in the new democratic scenario, the need began to be established for education that was relevant to the cultural identities of indigenous peoples, whose long road toward recognition was beginning to develop at that time.

After several years of being included under the auspices of the initiatives that were being developed in the rural education field (particularly the MECE program to improve rural education [Mejoramiento de la Calidad y Equidad de la Educación]), EIB began being institutionalized in 1996 with the implementation by the Ministry of Education (MINEDUC)—specifically the General Education Division (DEG)—of the Intercultural Bilingual Education Program (PEIB, by the Spanish acronym). We can identify three specific stages regarding this policy that have taken place in the last 20 years: (i) a first stage of focus; (ii) a second one of emphasis on the curriculum; and (iii) a third stage, which is beginning to be defined within the context of the education reform that is currently underway.

The PEIB was implemented in 1996 with the mission to "improve the quality and relevance of learning by contextualizing the curriculum and strengthening the ethnic identity of children, young people, and adults" (PEIB – ORÍGENES, 2011, p. 3). It therefore started as a program focused on rural schools with a high concentration of indigenous students, where improvement in the relevance of the education provided by the schools serving the indigenous population basically took place by means of including a cultural advisor—chosen by the indigenous communities as a traditional educator—who is responsible for integrating and developing indigenous cultural

content in the schools. Gradually, the number of schools targeted by the program increased.

The implementation of the Indigenous Language Sector (SLI, by the Spanish acronym) for establishments with *Aymara, Quechua, Mapuche, or Rapa Nui* students in 2009 was a second stage in the development of EIB in Chile. This stage is characterized by two elements: on the one hand, it generates an approach to the demands of indigenous peoples with regard to the progressive decline of the number of people who speak their languages and, on the other hand, in relation to the technical difficulties of its implementation. With respect to the former, the implementation of the SLI is responsible for reversing a process whose cause has often been attributed specifically to schooling, which involves the relegation of the indigenous language, first to the domestic space and then to previous generations, by virtue of the imposition of Spanish as the learned and official language. The school thus begins to return something that it had previously "taken away" from the communities. However, this has not been without its challenges, especially in the curricular and pedagogical areas: in school, correct teaching of a language requires that it first be standardized, a process that is not complete for many indigenous languages, in addition to having qualified speakers with teaching expertise, which are scarce. This has been resolved by creating pairs of teachers and traditional educators (Treviño et al., 2012). The teaching modality that should be adopted to ensure that children achieve adequate competency (e.g., full immersion) has also been an area of debate during this period.

Now, within the educational reforms currently underway, EIB is beginning to develop a third stage, which links it to the objectives established for all of the students in the country, and no longer solely for those who belong to an indigenous people. In the context of inclusion policies, on the one hand, and the expansion of educational objectives towards the development of transversal skills in the twenty-first century on the other, the development of intercultural competencies is relevant for all students in the school system. In this new stage it is assumed that—in their long history of exchanges with Chilean society—indigenous peoples have developed skills required by society as a whole. Along with that, this stage is expected to provide continuity to the strategies and contents from the previous stages (the figure of the intercultural educator, teaching of the indigenous language), but improving the ways in which they are institutionalized and increasing their local and regional relevance.

Although it is possible to identify different stages in the 20 years of development of intercultural education policies, such as those described above, we can also see certain continuities during the entire period: the focus on schools with a high proportion of indigenous students; the central importance of traditional educators; the incorporation of traditional content, symbols, and guidelines of indigenous cultures into schools; the idea of raising the profile of their languages and fostering their development; and the objective of improving the learning of indigenous students through contextualization.

Studies and evaluations of the PEIB are so far been few and far between. Williamson and Flores (2015) note that there have been no comprehensive assessments of what has been done so far. However, it is possible to identify elements that

are repeated, such as those referring to the content of the program, its pedagogical strategies, and its effects.

Studies that refer to the contents of the program mainly point to the fact that a *folkloristic* or static view of indigenous cultures tends to emerge from its implementation, which focuses on symbols and rituals rather than on the daily and historical dynamics of indigenous peoples, communities, and individuals.

With regard to the pedagogy and curriculum under the Program, it has been argued that its implementation occupies a marginal place in the daily curricular activities of schools, making it something of an extracurricular activity. In other words, EIB is limited to the time used for the SLI and does not pervade the work of the school as a whole. This situation is also replicated with the inclusion of the traditional educator, whose status within the school is vulnerable to the reception given to him or her by the administration and teachers. In addition, on occasions, the pair of teachers and traditional educators cannot become established, with the latter being relegated in importance (CIAE, 2011; Treviño et al., 2012). As we state above, the implementation of the SLI has also been hampered by the shortcomings in the standardization of the writing of indigenous languages, as well as by the lack of teachers and adequate pedagogical resources.

The studies also point to factors that have limited the impact of the PEIB. These include the fact that it has focused on basic education, meaning that indigenous students in secondary education have been left without coverage. Also, although the percentage of indigenous students that a school must have to join the program has been reduced from 50 to 20%, there are schools with more than 50% indigenous students that have not been targeted by the policy (Treviño et al., 2012).

It has been highlighted that the PEIB has an effect in terms of the self-esteem of indigenous children and their appreciation of their own cultures (CIAE, 2011). However, the issue of the program's impact on indigenous students' learning in general terms is perhaps the most neglected. Even now, it is not clear that it has effects in this regard. Finally, it is surprising that there are studies focusing on the segregation of indigenous students within the schools targeted by the program, especially with respect to teacher perception and assessment. Although this book addresses this topic, there is still a long way to go in order to fully understand this phenomenon, not only from the point of view of segregation and inclusion, but also in terms of national and local education policy actions and their relationship with segregation.

Twenty years on, the goal of improving indigenous children's learning through the contextualization of teaching is still one of the relevant challenges of Chilean education. This is important in the Inclusion Law—which prohibits the selection of students in municipal and subsidized-private schools—and with regard to improving public education, where the vast majority of indigenous students are taught. The same is true regarding the perspective of intercultural education for the whole of Chilean society: we all require skills that allow us to relate to those who make up our increasingly multicultural society.

2.3 Major Contributions

This book is published at a time when important changes are beginning to take place in the Chilean school system. The transformations being promoted should have an impact on the learning experience of a large proportion of students in Chile and certainly on those who belong to indigenous peoples. For this reason, we hope that the chapters presented here can support the development of intercultural education in the years to come, both from the perspective of academic research and with regard to the formulation of programs and policies that will introduce the education reforms to schools and their classrooms.

In terms of academic research, this book addresses several questions that will probably need to be addressed in the near future. These include the issue of the place occupied by indigenous students in our education system and the factors that shape their learning achievements and educational paths; matters involving cultural and linguistic rights and their recontextualization in the school, and the changing relationship between local communities and schools, or the inclusion of indigenous knowledge in the educational curriculum.

From the perspective of public policy, the chapters in this book are intended to serve as a reference for the formulation, (re)design, and assessment of programs and policies that will lead to changes in the education system. Perhaps the most urgent aspect in this area is to advance with intercultural education for all of the students in the system. This purpose is not only relevant insofar as it is stipulated among the objectives of the MINEDUC. The announced implementation of the area of civic education, the growing arrival of the children of immigrants—which increases the multicultural nature of our schools—and the insertion of our country into the global society, are all spheres in which we need to increase our intercultural competencies and attain a more multicultural and global view of citizenship. Several of the chapters in this book provide references in this regard. Another aspect of intercultural education that is considered in this text is that of bilingualism. For this reason, several of the chapters point out elements to which policies and programs should pay attention in order to improve their relevance and effectiveness, considering the significant consequences that language has on teaching and learning processes, and, more generally, on the social, cultural, and political integration of indigenous children.

2.4 Conceptual Criteria

The concept of intercultural education is, in itself, an idea in a state of tension. It is a construct that attempts to open up national education systems, which are essentially homogenizing, to cultural differences and to particular identities of diverse origins. This is a notion that involves much broader requirements than the contextualization of curricular content for specific populations. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2006), interculturality is a

dynamic phenomenon, in which there is "the existence and equitable interaction of diverse cultures and the possibility of generating shared cultural expressions through dialogue and mutual respect". Interculturality is a concept that refers to dynamic relations between cultural groups. An intercultural education would therefore be the result of changes in the historically asymmetrical relations between the populations that inhabit a country, and would provide room and representation for the cultural traditions of all students in a space that values them all equally.

The recognition of multiculturalism as a fundamental characteristic of contemporary societies is a condition for the possibility of intercultural education. The idea of multiculturalism refers to "the culturally diverse nature of human society. It refers not only to elements of ethnic or national culture, but also to linguistic, religious, and socioeconomic diversity" (Díaz-Couder, 1998).

In political terms, the notion of multiculturalism has contributed to the disruption of the order of multiracial societies and the privileges possessed by particular social or cultural groups, insofar as it gives visibility and representation to sociocultural diversity. It has also made it possible to diversify the way in which citizenship is understood. Multiculturalism gives rise to the exercise of "differentiated citizenship" that affords rights to certain individuals on the basis of their membership of a cultural group or community, and not exclusively by virtue of their relationship to the nation-state (Kymlicka, 1996).

In education, the notion of multiculturalism has made it possible to question curricular content that has been presented as neutral, such as that relating to the formation of the nation-state. The idea of multiculturalism also enables critical review of the hidden curriculum of our education systems. This notion of the hidden curriculum refers to content that is not verbalized: implicit academic, cultural, and social messages that are communicated to students in schools through opinions, attitudes, ways of naming, the expectations of the school and teachers, and the ways in which they are communicated. From the perspective of multiculturalism, the hidden curriculum reveals asymmetric valuations of the different cultures within our societies in general terms, but also makes it possible to address the actual discrimination to which those students who belong to so-called "minorities" may fall victim. It therefore provides the means to investigate the segregation of indigenous students, for example.

The idea of intercultural education therefore imposes challenges on public policies in general, and on educational policies in particular: as a perspective, interculturality implies multiculturalism, since it is the result of the establishment of dialogical relations, which recognize, validate, and value the multiple forms of cultural exchange that occur in each instance of social life.

Intercultural education is also a multidimensional issue. On the one hand, it does not refer exclusively to educational policies implemented in the official space of the school system, but also to experiences and initiatives developed in other social spaces. On the other hand, proposals for intercultural education draw from knowledge and experiences that do not belong exclusively to the educational sphere: it is in constant dialogue with the advances and setbacks in multiculturalism and interculturality that occur at the social level.

Although in this book we approach intercultural education from the perspective of the public policies created around it (and some of the chapters, such as Chapter 6 by Martínez or Chapter 5 by Treviño, Valenzuela, and Villalobos, consider it in this manner), the truth is that it extends well beyond them. In fact, as a policy model, EIB emerged from the demands of indigenous organizations and movements that have called for relevant education, one that improves the learning of indigenous children and provides them with representation. Indigenous peoples have had a leading role in both the expansion of the objectives and contents of EIB in the educational systems and in terms of its discussion and questioning, which has not always been sufficiently acknowledged in academic production or educational research.

Thus, there are numerous local initiatives and experiences of intercultural education or indigenous education that have emerged from the efforts and enterprise of indigenous organizations, movements, and individuals. Several of the chapters in this book provide accounts of these experiences, which may or may not be intended to become points of reference for the development or improvement of public policies in the sector.

Another dimension that shapes and informs the content of EIB is the community. This is the private space, and often the domestic sphere, where cultures continually create themselves. This community inhabits rural spaces, but also urban ones, and is formed not only by wise old people, but also young people who work and exercise their identity: they are being. Ideally, the community provides content for intercultural education. The representation of indigenous peoples in schools is therefore dynamic and contemporary: it also offers an image of indigenous peoples in their daily lives and not merely as folkloric or static cultures. This area is perhaps the most difficult to agree upon, because it is counterintuitive: if school content and school culture are generally defined by contrast to the domestic, in this case it is a matter of making the domestic space more relevant.

However, at the same time, the proposals and debates regarding intercultural bilingual education interact with developments that occur in other spaces of society: with the officialization of the use of indigenous languages in the regions, with health policies with intercultural relevance, with debates about the recognition of the multinational nature of our society, with proposals regarding indigenous representation in parliament. These and other phenomena are changing their conditions of possibility to the extent that, as we state above, intercultural education is more of a challenge than a reality.

Chapter 4, by Loncón, is an example of the multidimensionality of intercultural education. On the one hand, it shows us how teaching indigenous languages in schools is linked to linguistic policies and rights, as well as to the broader issue of their social status, and, at the same time, it points out that teaching these languages involves technical challenges, such as the standardization of their written forms, the choice of teaching models, and the training of qualified teachers. Finally, it illustrates the role of social activism in the revitalization of languages and in the articulation of demands. Likewise, Chapter 10 by Peña, Blanco-Álvarez, and Aroca-Araujo shows us how the constitutional recognition of the indigenous peoples of Colombia has

encouraged and legitimized the incorporation of indigenous *Arhuaco* mathematical knowledge into the school system.

Specifically because it is a multidimensional phenomenon, as an object of study, intercultural education requires a multidisciplinary approach that is in keeping with its complexity and particularity. The studies included in this book therefore approach it with a range of instruments with different scopes: from the comparative multinational study referring to the performance of indigenous students in mathematics and language based on the SERCE standardized assessment, described by Treviño, Villalobos, and Godoy (Chapter 3), where the authors conduct a quantitative analysis based on descriptive statistics and linear regressions, to another study by Treviño, Valenzuela, and Villalobos (Chapter 5), where the school segregation of indigenous students is investigated according to the results of the National Education Quality Measurement System (Simce, by the Spanish acronym) and the surveys of families that are carried out along with implementation of the Simce. These chapters, which seek to describe and explain the academic results of indigenous students, compare with others such as that by Haoa, Torres, and Zurob, (Chapter 9), where intercultural education on Easter Island is reviewed from an historical perspective using documentary sources. Corvalán and Joiko (Chapter 8), meanwhile, investigate proficiency in the *Rapa Nui* language among students on Easter Island by using self-reporting surveys.

Intercultural education is located at the crossroads of education and culture, and from that point it questions and examines the content of both spheres, with regard to indigenous societies as well to general society. But its complexity goes beyond that: both the normative proposals relating to intercultural education and the actual experiences of implementation constitute call for dialogue between different areas of knowledge. Many of the chapters of this book explore research paths that therefore require multidisciplinary and interdisciplinary approaches.

As we have seen above, the demand for intercultural education forces the dominant society to question the way in which it understands not only others, but also itself. The same is true of the specific experiences of EIB: intercultural education initiatives oblige the disciplines involved to review themselves. Therefore, in order to approach intercultural mathematical education from the perspective of the *Mapuche* people, Huencho, Rojas, and Webb (Chapter 11) have to bring *Mapuche* knowledge and Western pedagogy together and consider "mathematical work in the classroom and mathematics itself as cultural and historical products". Something similar occurs in Chapter 12 by Guillermo and Pérez, whose proposal of intercultural environmental education seeks to combine the teaching of sciences with that of traditional crafts, simultaneously questioning the educational distinction between natural sciences, human sciences, and technology.

2.5 Conclusions

As we have seen in this chapter, the task of analyzing EIB is a monumental one for several reasons. One of them is that it requires academia to take a broad perspective in order to recognize multiculturalism when conducting research. For example, this is a matter of moving past the dominant conception of indigenous peoples in Latin America, where the term indigenous has been used to label nearly 400 peoples with very different cultures, languages, and perspectives on the meaning of life (Falcón, 2002). The study of different native peoples in Chile reveals their cultural richness and the need to address that specifically from the academic world.

The study of educational initiatives from different cultures is also a bountiful source to gain more in-depth knowledge of the interaction between socialization, education, and culture, which differs between native peoples. For this reason, becoming aware of the conceptions of the world and their relationships to learning among the different native peoples should be a continuous source of information and feedback for education policy. This book includes different works based on local analysis and experiences, which pave the way to continue expanding the generation of knowledge that can lead to improvements in educational programs.

On the other hand, deepening knowledge about the challenges of EIB at global and local level could not have been achieved without the participation of academics from various native peoples, who have helped advance the understanding of cultures and their interactions with education. Likewise, collaboration between academics from different cultural backgrounds has also contributed to our understanding and the dialogue between cultures.

Lastly, EIB can be analyzed with various analytical and disciplinary tools. The inclusion of these tools in this book is intended to show that it is essential to consider and research EIB from a range of conceptual frameworks, using tools from history, anthropology, didactics, sociology, and linguistics, among others. It is only through this collaboration between fields of research that we will be able to advance towards a deeper understanding of the challenges of EIB, as we should not forget that all disciplines and the tools they use offer insights into certain facets of the phenomena under study, but neglect others, due to the scope and limitations of all research tools.

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Part I
Intercultural Education Policies in Chile: Context, Perspectives, and Evidence

Chapter 3
Learning Inequalities Between Indigenous and Non-indigenous Children in Latin America: The Bridge Between School and Families to Promote Quality

Ernesto Treviño (ID)**, Esteban Villalobos** (ID)**, and Felipe Godoy**

3.1 Introduction

Latin America has been making progress in incorporating education policies with an intercultural bilingual focus in parallel with the struggles and demands of indigenous peoples, which international organizations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), among others, have helped to place on the global agenda. These initiatives are seen as ways to deepen democratic processes and the political recognition of indigenous peoples, establishing education as a fundamental pillar for the promotion of more integrated and intercultural societies that are more equitable and which, as a consequence, are able to promote and assure their diversity under conditions of equity.

In order to achieve these objectives, countries in Latin America and around the world have promoted and developed intercultural bilingual education policy programs (López, 2014). Whether because of sociolinguistic characteristics, differences in the status of indigenous worldviews, or the forms of historical relationships between the indigenous and non-indigenous populations in each country (with more or less assimilationist approaches), intercultural education programs have been attributed different emphases and degrees of importance. In this vein, Colombia, Peru, Ecuador, and Guatemala have addressed the development of education plans

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and policies with an intercultural bilingual orientation in different ways, ranging from approaches with more *top-down* models (with low community participation) to others with more *bottom-up* designs (and with higher levels of participation in the definition and/or application of the associated education policy). However, these cases have certain similarities if we consider both the significant proportions of the indigenous population in these countries and differences in the status of native languages and cultures. On the one hand, the four countries mentioned incorporate indigenous intercultural bilingual education as a right guaranteed by national legislation and associated educational laws (Cortina, 2014; López, 2014). In practice, this right has varying levels of assurance and implementation in terms of coverage throughout the educational cycle (Cortina, 2014). Thus, the way in which this right is incorporated into the legal structures of the education systems (López, 2014) of the countries in question and in teacher training bodies (Cortina, 2014) is extremely varied: while some establish strategies to support teachers, others have teacher training programs in native languages with the consequent incorporation of these themes into the curriculum.

Although the strategies and approaches for the political implementation of interculturality in these countries vary, one of the elements common to all of them is the diagnosis regarding the deficit in the development of real interculturality in their curricula and/or a complete bilingualism at the different levels of formal education (Loncón & Hecht, 2011; López, 2014; Treviño et al., 2012), which is certainly true of the vast majority of Latin American countries, if not all of them (Dietz & Mateos, 2013). In this respect, educational strategies based on EIB have tended more to Hispanization and cultural assimilation through the use of native languages rather than the promotion and development of knowledge of indigenous cultures in combination with non-indigenous knowledge (Dietz & Mateos, 2013; López, 2014).

The literature notes the ongoing development of a difference in cultural status between the indigenous and non-indigenous, which is deeply rooted in the beliefs of many parents of indigenous children, as various experiences have shown (Hirmas et al., 2005). This difference in status is also experienced in the discontinuity of EIB strategies between the different educational levels in which it is applied or where there is a curricular correlation, as well as in the way that the knowledge acquired is assessed by means of standardized tests in Spanish, in an attempt to measure knowledge according to a Western worldview (Treviño, 2006). For this reason, one of the great challenges faced by EIB is to effectively develop an intercultural dialogue in order to promote the construction of a world that validates both forms of knowledge and beliefs, and which favors culturally differentiated development, but which is not necessarily unequal (Cortina, 2014; López, 2014).

3.2   Cultural Diversity: Languages and Territories

Seen from a territorial perspective that incorporates cultures and their languages, the countries that are included in this study have significant cultural and geographical/territorial diversity. While we are not able to fully address this great diversity, we do take it into consideration. On the one hand, considering geographical areas, we can broadly identify five different linguistic areas or ecosystems, according to the *Sociolinguistic Atlas of the Indigenous Peoples of Latin America:* Peru, Ecuador, and Colombia: Andean; Peru, Ecuador, and Colombia: Amazonian; Ecuador and Colombia: Pacific; Colombia: Caribbean; and Guatemala: Mesoamerican (UNICEF & FUNPROEIB ANDES, 2009).

In accordance with the description in that document, these five geographical areas are associated with different languages. While in some cases these languages have common roots, in others the similarities lie in the existence of similar living conditions, which are largely determined by the geographical area in which they exist and which define, for example, their culinary customs, worldviews, and, undoubtedly, transfers of culture and products. Meanwhile, in other cases there are peoples who no longer speak their original languages, but those of others with whom they have undergone processes of cultural syncretism. Consequently, in terms of languages, these five areas have such a diverse cultural mosaic that it is difficult to examine them with quantitative studies such as this, since the variety of languages and peoples is associated with highly complex geographical and national uses, beliefs, and conditions. We assume this difficulty as part of the possible limitations of this study and as a challenge to be considered in future research.

This diversity and complexity is linked to a third level that we can identify as *structural*, where the problem of the inequality faced by indigenous peoples and their access to quality services emerges (Hall & Patrinos, 2004; Treviño et al., 2012), a fact which is common to the different realities faced by the region's indigenous peoples. In this scenario, schools are understood as spaces of socialization that can motivate processes of social mobility or reproduction, determining particular forms of integration and exclusion (Treviño, 2006). From the perspective of academic effectiveness, it is believed that schools can counteract the effects that family factors and the education system as a whole can have on the reproduction of existing basic inequalities between indigenous and non-indigenous children. This study aims to carry out an in-depth examination of the relationship between the family and the school, as well as the capacity of school factors to reduce educational gaps and, based on that, the possibilities of schools to "level the playing field", improving the conditions to promote equity in the system as a whole.

3.3 Explanatory Factors and School Effectiveness in Latin America

The available empirical evidence shows that there are wide disparities in learning between indigenous and non-indigenous students. These inequalities are known as learning gaps and are measured by comparing results on standardized tests between two population groups. Numerous studies have been carried out on this concept (Bravo et al., 1999; Fryer & Levitt, 2004; Hanushek & Rivkin, 2006; Jencks & Meredith, 1998; McEwan, 2004; Murnane et al., 2006; Pallante & Porche, 2003), and all of them aim to measure the magnitude of these gaps.

Measuring learning gaps, however, is only the first step in the research, as the central focus of the studies is to identify the factors that explain the inequalities in the test results. Thus, once the determinants of inequality are understood, policies can be developed to reduce the gaps.

Studies indicate that a significant proportion of the learning gaps between indigenous and non-indigenous children are explained by differences in the characteristics of the children and the schools. Research following similar methodologies to those of this study has found that there are learning gaps between indigenous and non-indigenous children in Guatemala, Peru, and Mexico, and that somewhere between 41 and 75% of them can be explained by differences in the characteristics of the children and the schools (Hernandez-Zavala, 2006). Analyses in Chile and Bolivia suggest that from 50 to 70% of the gaps are due to differences between schools, between 20 and 40% involve disparities in the characteristics of indigenous and non-indigenous children, and between 10 and 20% are either not explained or are due to the interaction between the characteristics of the children and the abilities of their schools to generate learning with the population they serve (McEwan, 2004).

In order to study the factors that explain learning gaps, it is necessary to have a theoretical model that organizes how to understand the possibilities that schools have to reduce the gaps and how the functioning of schools is associated with factors that operate at different levels and parts of the teaching–learning process. For this purpose, we use the CIPP (Context, Inputs, Processes, and Outputs) evaluation model (Scheerens, 2000; Treviño et al., 2012), which considers that educational outcomes depend on the context of the children, the social characteristics of their families, and the social composition and location of the school. Inputs refer to the resources that are available to schools for work. These include the conditions of the children upon entry, such as their educational history; that is to say, it is understood that schools do not begin to work with a *clean slate*, but rather with a population with particular social characteristics, with a position in the specific social structure. Processes represent the core of the educational task and refer to human relationships that occur in the daily interaction of schools in the process of teaching and learning. The products are of different types and include academic learning, elements of citizen education and the education of individuals, as well as socioemotional development, among others. This chapter focuses on academic learning and considers elements of context and inputs

that are present in the data from the Second Regional Comparative and Explanatory Study of the Quality of Education in Latin America, SERCE (UNESCO, LLECE, 2008).

3.4 Methodology

This study used a quantitative analysis methodology based on SERCE data in two phases, one descriptive and one explanatory. For the first phase, descriptive statistics were used for the variables considered to be explanatory factors for educational outcomes for the third and sixth grades of elementary school. For the explanatory phase, a methodology of simple linear regressions or Ordinal Least Squares (OLS) was used. This makes it possible to predict a phenomenon, in this case, the educational outcomes of indigenous and non-indigenous children in the third and sixth grades of elementary school in the areas of Language and Mathematics according to a series of regressors or predictors. The decision was made to apply OLS models after comparing different models and ways of analyzing the data.

The variables considered in the different models are shown in Tables 3.1 and 3.2, depending on the family or school level.

Analysis of the results from each regression model was carried out in two phases: a first phase of analysis of the family-level regressors and a second phase in which the school-level variables were incorporated. In this way, it is possible to observe the effect caused by the introduction of school-level variables on the source variables that determine selection biases in the cases. This process was carried out for each country for both the language and mathematics areas. The models were applied using robust standard errors, sampling weights, and being grouped or clustered by school, in order to ensure that the results of children belonging to a particular school are not independent of it. That is, it is assumed that schools are a dominant factor that explains the educational outcomes of children and that the dynamics of teaching and learning that take place within them are not a random process.

Table 3.1 Third grade of elementary school

Variables included in the models	Model 1, with family variables	Model 2, with school variables
Socioeconomic level	X	X
Mother's educational level	X	X
Attendance of preschool	X	X
Repetition	X	X
School climate	–	X
Infrastructure	–	X

Source Prepared by the authors

Table 3.2 Sixth grade of elementary school

Variables included in the models	Model 1, with family variables	Model 2, with school variables
Socioeconomic level	X	X
Mother's educational level	X	X
Attendance of preschool	X	X
Repetition	X	X
Teacher speaks indigenous language in classroom	–	X
Class organization	–	X
Infrastructure	–	X

Source Prepared by the authors

In addition, we only considered schools with indigenous children, in order to reduce bias and analyze cases that were comparable with each other: children who attend the same school. The schools that did generate biases in the analysis were thus left out, such as those that do not have indigenous children, as these biases made the cases analyzed incomparable.

One key aspect to consider is how the children were understood to be indigenous. In this regard, the literature presents various approaches and, in many cases, the suggestion is to consider more than one variable or characteristic to define a population (whether children or adults) as indigenous. In this case, we used the variable associated with "speaking indigenous language at home" as a determinant of being indigenous, in cultural and identity terms. Although there is another variable in the SERCE study, it proved to be less consistent.[1] We decided on the factor "speaking indigenous language at home", since it is an answer given by the children within the questionnaire and it allows us to utilize a characteristic of greater cultural belonging, referring to the space of basic cultural reproduction, as the family is considered to be.

It should be noted that, for the case of the sixth grade of elementary school, we used the variable associated with children's perception of the teacher speaking an indigenous language in class, as the proportion of children at the school level who selected this option. This factor chosen because it allows us to approach a weighted notion of the possible bilingual reality of classrooms. This is a factor that could have a positive effect on the educational outcomes of children who speak indigenous languages, thus facilitating learning.

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[1] The family questionnaire also included a question regarding the "language the student first learned to speak" (question 5 on the family questionnaire), reported by the parents. Since this option requires parents to remember something about their child's life, it is reasonable to understand that these responses are less accurate than those provided by the students about the language they "speak at home". For this reason, we chose to use only the students' responses on the language they speak at home.

Finally, the educational results included are the scores obtained by third- and sixth-grade students on the SERCE standardized tests in the areas of Mathematics and Language. These tests have a mean of 700 points and a standard deviation of 100. For each factor included in the models, we analyze the effect in points on the standardized test for the respective area.

3.5 Family and School Variables: A First Look at the Differences Between Indigenous and Non-indigenous Children Based on SERCE Data

When primarily characterizing the general differences shown by the children in the different aspects that will be considered as explanatory factors of educational outcomes, we observe that:

- Indigenous students are concentrated in the lowest deciles of socioeconomic status, which is consistent with the international evidence reviewed in other sections of this book. In both the third and sixth grades of elementary school, indigenous children are over-represented in the lower deciles of socioeconomic level and under-represented in higher segments. In contrast, non-indigenous students are evenly distributed between the different deciles of socioeconomic level. This situation is similar in all countries except for Ecuador, where there is greater similarity between indigenous and non-indigenous students in terms of socioeconomic level.
- Indigenous children repeat grades more often than non-indigenous children. About half of indigenous children in third and sixth grade have repeated grades, compared with just over a quarter of the non-indigenous students in the sample.
- Indigenous children attend preschool less often than non-indigenous children. Some 70% of non-indigenous children have attended preschool, while 60% of indigenous children attended this level of education.
- Schools attended by indigenous children have a significantly worse school climate, lower quality of classroom organization, and lower quality of infrastructure.

As we can see from these data, the social disadvantage in which the children of the native peoples of the countries in question find themselves is consistent with school conditions that reflect both lower quality in classroom processes and in the resources available in the schools they attend.

This chapter attempts to focus on trying to solve the problem of how to reduce educational gaps between indigenous and non-indigenous children based on the characteristics of the school. We will look at what factors explain educational outcomes and could be considered to reduce these educational gaps, and what effects these factors would have on reducing the gaps and the consequences of self-selection in family level variables, such as socioeconomic level and repetition of grades, among others.

3.6 Educational Results in Third Grade of Elementary School

The factors thought to explain educational outcomes for indigenous and non-indigenous children at the family level are shown below; that is, the effect generated by certain family characteristics without considering the possible effect of school characteristics on educational outcomes. The intensity of their effects is shown, with those factors that resulted in significant values highlighted in bold and those that did not without bold. It should be noted that the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Language.

Looking at the data as a whole, it is first important to note the significance of children who speak indigenous language as a negative factor for educational performance in the Language area. Next, we see the Socioeconomic Level (SEL), which has a significant positive effect. Then come negative effects on educational outcomes: having repeated grades; the mothers of students having incomplete or no elementary education; mothers having complete elementary education or incomplete secondary education; and the school being associated with a rural administration. It is notable that the mother's tertiary education level (complete secondary or incomplete tertiary education) and preschool attendance are not significant in virtually all the countries reviewed, except in the case of Guatemala, where preschool attendance has a significant positive effect. According to the literature, possible gaps or deficiencies in coverage at these levels of education, both of which have a significant capacity to generate social mobility effects, could explain this situation.

The question then arises as to what specifically happens with each of the factors identified as being significant in the various countries.

Firstly, when the child speaks an indigenous language at home, it can be observed that the negative effect varies between 20 and 36 points on the associated test. The largest negative effect is observed in Colombia, where it results in 36 fewer points, while Ecuador shows the smallest negative effect, at 20 fewer points on the associated test. In short, children who speak indigenous languages at home start out with an initial disadvantage that ranges from 20 to 36 fewer points on the associated test. One element that we should take into account is that Colombia is the country with the best results in Language, so, despite the gap observed in both the indigenous and non-indigenous populations, the results are the highest observed on the respective test. This could imply an interesting effect of schools in generating good academic results, as seen with the associated standardized test. We will return to this point later.

Secondly, the socioeconomic level is the only factor that has a systematic positive effect on the results in Language, considering only the family-level variables. This effect is also highly variable, ranging from 13.5 (Guatemala) to 33.89 (Colombia) points. Here it is worth examining how the school system and school-level factors could generate a positive peer effect on other children from lower socioeconomic levels and, consequently, reduce learning gaps. In this respect, it is interesting to

consider the possibility of social mixing in each educational system, considering the original socioeconomic level of each child.

A third aspect to consider is repetition of school grades. Again, the country where this factor has the greatest negative impact on educational results in Language is Colombia (negative effect of 23.66 points), while that with the smallest effect is Guatemala (negative effect of 15.98 points). The lower variation would indicate a more generalized deficit in the capacities of school systems in these countries to re-enter the virtuous cycle of education, considering only family-level variables. Its greater impact in the case of Colombia may indicate a school system with a large capacity to generate measurable educational results, but in which the subjects who go through different teaching and learning processes are heavily punished by repeating grades. In the case of Guatemala, the possible lower capacity of the system to generate measurable learning in the area of Language may have a lower impact on those children who repeat grades.

A fourth factor is the educational level of the mother, which is shown by analyzing three educational levels (Table 3.3), of which only the first two were significant. The first, involving mothers who have no education or incomplete elementary education (i.e., they attended school, but did not manage to complete a level), has a significantly negative effect in Colombia (22.7 points) and Ecuador (18.8 points), but not in Guatemala and Peru. In the case of the second level considered, which includes mothers with complete elementary or incomplete secondary education, negative impacts were observed in all countries except Guatemala, varying between 13 (Ecuador) and 18 (Colombia) points. The consistent negative impact of the educational level of the mother—going beyond its significance—indicates not only the importance that the mother's education would have on educational outcomes, but also the possible need for remedial education of mothers in these countries as a way of generating improvements in the educational outcomes of children.

Table 3.3 Educational results in third grade of elementary school, with family variables: Language

Family variables	Colombia	Ecuador	Guatemala	Peru
Indigenous	−36.59	−20.54	−23.22	−31.15
SEL	33.89	29.69	13.52	29.54
Repetition of grades	−23.66	−26.96	−15.98	−25.54
Mother has no education or incomplete elementary education	−22.70	−18.18	−10.90	−12.86
Mother has complete elementary or incomplete secondary education	−18.88	−13.47	−1.40	−15.52
Mother has complete secondary or incomplete tertiary education	−8.50	−1.51	13.40	−6.91
Attendance of preschool	5.52	4.58	6.36	3.32
Rural school	−10.70	−8.18	−27.40	−13.01
Constant	545.99	483.23	494.35	515.73

Source Prepared by the authors

Finally, the factor of rurality or attending a rural school had significant negative effects in all countries, albeit highly variable, ranging from a negative effect of 8 points in the case of Ecuador to 27 points in the case of Guatemala. It is interesting that, with regard to this factor, Colombia continues to obtain a smaller negative effect on education outcomes, of around 10 points. Here we should emphasize the capacities that these countries may possess for the provision of education in different environments, urban and rural, regardless of the type of administration that they have. The cases of Ecuador and Colombia are of great interest, insofar as both have ways of providing decisional autonomy to communities for curricular and administrative management. Peru also has similar autonomy.

Observing these factors together enables us to link the effect of children speaking an indigenous language at home to the family characteristics that they possess, which, combined, position them unfavorably in relation to the challenge of the teaching and learning process measured on the respective standardized test. The question then arises: how do the factors reviewed operate in the case of Mathematics?

In the case of Mathematics, we can first observe (Table 3.4) a reduction in the negative effect of speaking an indigenous language on educational outcomes and the positive effect of the socioeconomic level of the students' families. The grade repetition rate also has a smaller negative effect, although this is more similar to that observed in the case of Language in terms of the direction and intensity of the effect. In the case of the mother's education, this is mostly insignificant, with the exception of the secondary educational level, which shows different results from those observed in the case of Language (we will look at this below). Preschool attendance is also not significant, as in the case of Language. Finally, residing in a rural area has a greater negative effect than in Language.

We will now review the particularities of each factor for which significant effects were observed.

In the case of speaking an indigenous language, we observed a decrease of about 10 points in the negative effect that this factor generates on educational outcomes in Mathematics, compared with what was seen in Language. With regard to the way in which this factor behaves in different countries, we note the case of Ecuador, where—as in Colombia—the negative effect is around 24 points. What is observed in the case of Ecuador is interesting, as it is a country that has an interculturality program and a longstanding structure for the administrative management of interculturality. Although it is possible that this element of education policy is having a better influence on Language outcomes, it would be appropriate to wait to see its effects when adding up the school variables and observing what happens in the sixth grade of elementary school. On the other hand, in Peru we see a reduction of about 20 points in the negative effect of this factor when compared with Language, this being the country where speaking an indigenous language at home has the least observable impact in the area of Mathematics. Finally, Guatemala shows a reduction in the negative impact of speaking an indigenous language on the academic outcomes in Mathematics, implying 14 points of negative or initial disadvantage.

Table 3.4 Educational results in third grade of elementary school, with family variables: Mathematics[1]

	Colombia	Ecuador	Guatemala	Peru
Indigenous	−26.40	−26.48	−14.66	−10.84
SEL	19.38	16.70	7.75	23.61
Repetition of grades	−23.00	−19.36	−11.98	−24.64
Mother has no education or incomplete elementary education	−10.09	−11.28	−11.73	−20.48
Mother has complete elementary or incomplete secondary education	−13.90	−21.30	−7.54	−23.83
Mother has complete secondary or incomplete tertiary education	6.46	−10.25	7.41	−11.82
Attendance of preschool	2.29	0.06	7.88	2.82
Rural school	−21.98	−0.47	−16.98	−18.64
Constant	521.48	505.36	488.82	516.67

[1]It should be noted that the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Mathematics
Source Prepared by the authors

At the socioeconomic level, there is also a reduction in the positive effects or socioeconomic segregation associated with better educational outcomes in Mathematics. It is thus observed that those who belong to families with higher socioeconomic levels start out with between 7.8 and 23 more points than children from families with lower economic resources. In this factor, the country in which the socioeconomic level has the most significant positive influence on educational outcomes in Mathematics is Peru, with 23 points, followed by Colombia with 19.

In the case of repeating grades, the negative effects on results in Mathematics are slightly lower than those observed in Language, with the largest of these impacts being in Peru (24 fewer points), Colombia (negative effect of 23 points), Ecuador (negative effect of 19 points), and Guatemala (negative effect of 12 points).

Although the mother's education is mostly not significant, in the case of failure to complete secondary education, a significant negative effect is observed in Peru (negative effect of 24 points), Ecuador (negative effect of 21 points), and Colombia (negative effect of 13 points). This again suggests the need to improve remedial programs for mothers in order to achieve better educational outcomes in the area of Mathematics. What possibilities the schools have to reduce the possible negative effects of mothers not completing their education, considering their resources, will be a question to be answered by incorporating these factors.

With regard to preschool attendance, it is interesting that it is only significant in the case of Guatemala. It is possible that the country's early stimulation program is having a positive impact. However, these effects should be seen in both Mathematics and Language, which is not the case.

Finally, attending a rural school is a major negative factor. The exception is
Ecuador, where rurality is not significant in explaining the results in Mathematics,
indicating possible success in the strategy of educational provision in this country,
which makes it possible to reach both contexts to a similar standard. In the other
countries, we observe negative effects ranging from 22 points (Colombia) to 17
points (Guatemala). The possibility of schools and their characteristics reducing or
eliminating rurality as a factor is an element that we will look at below with the
introduction of variables associated with this level.

Looking at the school variables (Table 3.5), we observe interesting effects on the
impacts that the family-level variables originally had. On the one hand, speaking an
indigenous language at home tends to decrease their negative effect in all countries
analyzed, although it remains a very important factor. Meanwhile, the effect of the
socioeconomic level of families tends to decline, giving way to the socioeconomic
level of the school as the most important factor that would explain academic outcomes
and the gaps in these outcomes between indigenous and non-indigenous children
in the area of Language. The importance and level of impact of repeating grades
tends to remain steady in all of the countries, although there are slight decreases
observed in the cases of Peru and Ecuador. The mother's education tends to remain
non-significant, with the exception of some educational levels in Colombia (first
and second educational levels) and Peru (second educational level), which tend to
slightly reduce its effects in the presence of school variables. The same is true of
preschool attendance, which remains insignificant, except in Guatemala. Rurality is
not significant in Colombia and Ecuador, but it is significant in Guatemala (negative
effect of 18 points) and Peru (positive effect of 11 points).

When we specifically observe what happens with school factors, we see that they
all generate positive effects on academic outcomes; that is, they allow improve-
ment in Language outcomes. Infrastructure has a significant, although small, effect
in practically all countries—except for Guatemala—ranging from 2 points (Peru
and Colombia) to 7 points (Ecuador). This aspect may indicate the existence of
infrastructure deficits in most of the schools attended by indigenous children in the
countries observed, where small improvements generate positive impacts on school
performance in Language.

As for the classroom climate, there is a sustained positive effect ranging from
2 points (Ecuador) to 15 points (Guatemala). In the case of Guatemala, it is likely
that the lack of significance of the infrastructure is remedied with a good class-
room climate. The effects observed in Colombia (13 points) and Peru (10 points), in
contrast with the small positive effects observed in both cases for the infrastructure
factor, point to the need not only to make progress in school infrastructure, but also
to improve and expand the scope of classrooms that support positive, responsive
teaching–learning processes that respect social and cultural differences.

Finally, the socioeconomic level of the schools would be one of the main factors
explaining the learning gaps between indigenous and non-indigenous children in
Language, Ecuador being the country where the greatest effect occurs, with 44 points.
Next is Colombia with 39 points, Peru with 23, and Guatemala with 11 points.
The large influence of this variable to explain educational outcomes in Language

Table 3.5 Language educational outcomes in third grade, with school variables[1]

School variables	Colombia	Ecuador	Guatemala	Peru
Indigenous	−29.35	−12.35	−17.86	−15.09
SEL	10.80	9.69	6.68	19.77
Repetition of grades	−22.41	−20.20	−15.35	−21.51
Mother has no education or incomplete elementary education	−14.42	−12.10	−12.78	−8.14
Mother has complete elementary or incomplete secondary education	−11.27	−7.92	−5.46	−14.93
Mother has complete secondary or incomplete tertiary education	4.37	−6.13	10.69	−7.26
Attendance of preschool	3.74	3.69	5.89	1.36
Rural	3.56	12.86	−17.76	10.70
Infrastructure	2.25	6.69	−0.60	2.07
Classroom climate	12.25	2.34	14.83	10.09
Socioeconomic level of the classroom	38.66	44.22	10.78	23.21
Constant	517.20	452.34	501.27	493.80

[1]It should be noted that the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Language
Source Prepared by the authors

in the cases of Ecuador and Colombia points to processes of socioeconomic school segregation, which could have significant relationships with being indigenous, a group whose parents have lower levels of education, lower socioeconomic status, and higher rates of grade repetition, among others.

In the case of Mathematics (Table 3.6), we can observe significant changes after incorporating the school-level variables. The most important effect is the decrease in significance of the indigenous variable in the case of Peru. That is, the infrastructure, climate, and socioeconomic level variables of the classroom have the capacity to eliminate the negative effect that speaking an indigenous language at home has on the educational outcomes of children in Mathematics. However, in both Colombia and Ecuador there are still high negative effects of the indigenous variable (despite small decreases of 2 and 4 points, respectively). Meanwhile, in the case of Guatemala this negative effect is reduced significantly (from 15 to 9 points). In the case of the socioeconomic level of the family environment, we can see an ostensible reduction in its effect, becoming insignificant in the case of Guatemala, with Peru remaining the country where this variable is highest (17 points, a difference of 5 points without school variables).

On the other hand, grade repetition is established as a more stable variable, with the school factors not having a very important impact on reducing it (between 3 and 4 points).

Table 3.6 Educational results in third grade of elementary school, with school variables: Mathematics[1]

	Colombia	Ecuador	Guatemala	Peru
Indigenous	−24.25	−21.24	−8.65	−0.59
SEL	10.61	5.83	−0.01	17.13
Repetition of grades	−19.79	−14.87	−11.64	−21.06
Mother has no education or incomplete elementary education	−7.43	−7.38	−13.38	−16.80
Mother has complete elementary or incomplete secondary education	−11.65	−17.56	−11.36	−23.35
Mother has complete secondary or incomplete tertiary education	8.15	−12.32	4.85	−11.85
Attendance of preschool	0.44	−0.28	7.22	1.45
Rural	−6.33	10.25	−5.00	−3.35
Infrastructure	1.63	6.59	0.38	1.77
Classroom climate	12.63	1.48	10.68	11.48
Socioeconomic level of the classroom	18.68	21.73	12.29	13.28
Constant	506.02	487.21	490.20	498.64

[1]It should be noted that the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Mathematics
Source Prepared by the authors

General trends are unclear with regard to the mother's education, but they are relatively similar to those observed in Mathematics without including the school variables, which is similar to what we identified with respect to preschool attendance.

Looking at the school variables, in infrastructure and classroom climate, we observe effects are that are very similar to those seen in Language. The former is not significant in Guatemala, while there are low effects (1.7 points) in Colombia and Peru, but there are positive impacts in Ecuador (6.6 points). With respect to classroom climate, the effects decrease slightly (around 3 points), except in Colombia where there is a slight increase (less than 1 point).

Finally, there is a significant reduction in the effect from the socioeconomic level of the classroom, although its significance is maintained, as well as its relative importance in relation to the other school variables to a large extent. Thus, although Ecuador is the country in which this factor has the greatest impact (22 points) on explaining educational outcomes, its influence is reduced by almost 50% compared with that observed in Language. Significant reductions are also observed in Colombia and Peru. However, its effect increases in the case of Guatemala. The reasons for this should be analyzed in detail with elements that are difficult to investigate in this study in relation to classroom practices and education policy mechanisms, among others. Aside from this, the importance of the school's socioeconomic level is unquestionable.

3.7 Educational Results in Sixth Grade of Elementary School

Considering only the family-level variables in the results in the sixth grade of elementary school (Table 3.7), we can see that, with the exception of Colombia, the negative effects of speaking an indigenous language at home on educational outcomes increase strongly, rising by an average of 11 points between the third and sixth grades of elementary school. In this regard, the effects of belonging to an indigenous people tend to be cumulative in the school trajectory.

In contrast, in the case of family socioeconomic level, increases are observed in Ecuador and Guatemala, and its positive effect decreases in Colombia and Peru. Thus, in both Ecuador and Guatemala, the effects of belonging to a higher socioeconomic level increase their positive impact and, therefore, this may indicate an increase in the effects of self-selection on educational outcomes. In Colombia and Ecuador, the trend appears to be in the opposite direction, but not because this implies the elimination of the effects of self-selection associated with the family's socioeconomic level.

In relation to repeating grades, we observe a process similar to that of the socioeconomic level: its negative impact decreases in Colombia and Peru, but increases in Guatemala and Ecuador. Similarly, the effects of having repeated grades in the initial instances of the educational trajectory (third grade) would have negative effects on academic outcomes in Language, with these being more important in Guatemala and Ecuador, while Colombia and Peru could possibly be incorporating actions that would allow the negative effect to be reduced, but not eliminated.

Table 3.7 Language educational outcomes in sixth grade of elementary school, with only family variables[1]

Family variables	Colombia	Ecuador	Guatemala	Peru
Indigenous	−23.59	−30.43	−33.07	−44.42
SEL	26.48	32.99	17.20	23.76
Repetition of grades	−22.82	−37.35	−11.89	−22.29
Mother has no education or incomplete elementary education	−1.16	−24.30	12.27	−25.50
Mother has complete elementary or incomplete secondary education	−4.68	−16.19	11.25	−17.22
Mother has complete secondary or incomplete tertiary education	−2.04	−4.95	28.63	−14.00
Attendance of preschool	4.47	4.42	4.16	1.56
Rural	−19.16	−17.80	−23.55	−11.79
Constant	544.78	495.89	486.61	515.69

[1] It should be noted that the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Language

Source Prepared by the authors

In terms of the mother's education, we clearly observe situations that are similar to those seen in the third grade: some levels in some countries are significant, while others are not. Going beyond these non-univocal effects, on the one hand, the tendency is for the significant effect to be eliminated in the case of Colombia (in the third grade the first two levels of the mother's education were significant) and, on the other, for the negative effects observed in Ecuador and Peru to be maintained and strengthened. In the case of Ecuador, there was an increase in the negative effect of mothers not completing their elementary or secondary education. In Peru, all educational levels of the mother are significant with respect to their negative effect, thus reinforcing the notion that failure to complete formal education levels on the part of mothers may have a cumulative effect over time. Finally, in the case of Guatemala, we see a very different effect: in the sixth grade of elementary school, the positive effect of the mother's secondary education becomes highly significant (29 points).

Preschool attendance continues to have a non-significant effect, but in all countries, so the significant effect observed in Guatemala in the third grade of elementary school is diluted in the sixth grade.

Finally, the effects of rurality follow two different trends: on the one hand, its negative effect increases in Colombia and Ecuador, but decreases slightly in Guatemala and Peru. However, Guatemala maintains the worst negative effect with this factor, suggesting problems in providing equitable education in both rural and urban settings.

The results in Mathematics in sixth grade, which incorporate only family variables (Table 3.8), point to a first factor that should be highlighted: the variable of *indigenous belonging* becomes non-significant in Colombia, implying the elimination of the high negative effect observed in the third grade of elementary school. While in Ecuador this effect is reduced very slightly, in Guatemala and Peru there are significant increases in this effect. The case of Peru is noteworthy, as the negative effect increases from 11 to 41 points; that is, it almost triples between the third and sixth grades.

The impact of the family's socioeconomic level increases in all the countries examined. The largest increase is in Ecuador, where the negative effect of this factor on educational outcomes increases from 17 to 33 points. Although the smallest increase is seen in Peru, it continues to have a large effect, as it is the country with the second highest occurrence of family self-selection by socioeconomic level. On the other hand, Guatemala, which is the country with the smallest positive effect of this factor in both the third and sixth grades of elementary school, shows a significant proportional increase (from 8 to 12 points).

Repeating grades tends to have a lower effect on educational outcomes in Mathematics in most countries, except Ecuador, where it increases. It is interesting that the countries analyzed show a tendency for the negative effects of this factor to decline, which is similar to what was observed in the case of Language.

With regard to the mother's education, the effects differ from those observed in Language and, although the trend is that the effects become less significant, we observe an important change in the case of Ecuador, where all the educational levels not achieved by the mother are significant and they have significant negative effects. The largest effects are seen when the mother has not completed elementary or secondary education, but failing to finish university would have negative effects

Table 3.8 Educational outcomes in mathematics in sixth grade of elementary school, with family variables[1]

	Colombia	Ecuador	Guatemala	Peru
Indigenous	−10.80	−25.03	−20.94	−40.88
SEL	21.81	33.22	12.40	24.58
Repetition of grades	−18.64	−25.24	−9.96	−19.01
Mother has no education or incomplete elementary education	7.46	−34.90	−1.05	−21.17
Mother has complete elementary or incomplete secondary education	1.89	−33.90	−0.15	−13.74
Mother has complete secondary or incomplete tertiary education	−4.32	−19.65	15.28	−2.83
Attendance of preschool	0.80	5.92	5.48	−0.40
Rural	−11.94	−16.49	−16.72	−11.69
Constant	511.80	518.96	483.33	522.51

[1]It should be noted that the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Mathematics

Source Prepared by the authors

of close to 20 points. In the case of Peru, the opposite is seen, where only the first level of the mother's education (no education or incomplete elementary education) remains significant, with a negative effect of 21 points.

Attending preschool is ultimately a variable that is not significant in all countries in terms of outcomes in Mathematics in the sixth grade of elementary school. This trend is consistent with that observed in Language between the third and sixth grades of elementary school.

Finally, the rurality variable shows interesting changes compared with what was seen in third grade. On the one hand, there is a decrease in its effect in both Colombia and Peru (negative effects that are 10 and 7 points smaller, respectively). In Ecuador, it became significant, with a negative effect of 16 points, which is the highest negative impact reported among the four countries. This is an important element to consider, since possible differences in education provision in the third grade of elementary school become evident and stronger in the sixth grade, indicating their cumulative effect over time. One final interesting element is that this factor becomes insignificant in Guatemala, and may imply success in the provision of education at that level. However, in order to reach convincing conclusions, it is necessary to observe what happens when school variables are added.

Considering the school variables, in the case of speaking an indigenous language, the results for Language in the sixth grade of elementary school (Table 3.9) show a similar trend to that observed in the third grade when adding school variables. Thus, the negative effect is reduced in all of the countries studied, the largest being that observed in Peru, where it declines by 20 points (from a negative effect of 44 to 24 points). However, Peru remains the country with the worst negative effect after

Table 3.9 Educational outcomes in language in sixth grade of elementary school, with school variables[1]

School variables	Colombia	Ecuador	Guatemala	Peru
Indigenous	−14.65	−20.59	−19.77	−24.30
SEL	14.01	15.27	8.40	8.54
Repetition of grades	−21.80	−33.16	−11.55	−19.57
Mother has no education or incomplete elementary education	−4.10	−23.08	10.65	−25.55
Mother has complete elementary or incomplete secondary education	−8.16	−13.93	8.32	−19.47
Mother has complete secondary or incomplete tertiary education	−3.94	−8.80	26.54	−17.26
Attendance of preschool	4.33	3.98	4.65	−0.45
Percentage of children who indicate that a teacher speaks an indigenous language	−2.08	−14.25	−8.89	−5.13
Infrastructure	−1.10	7.39	2.22	3.49
Classroom organization	0.53	−5.72	−5.72	−3.79
Rural	4.09	−7.50	−9.98	7.61
Socioeconomic level of the classroom	30.65	35.85	14.43	33.11
Constant	529.29	501.25	485.72	509.43

[1]As in the previous sections, the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Language
Source Prepared by the authors

adding the school variables. Meanwhile, Colombia is the country that shows the smallest negative effect, where the negative effect of this factor falls from 29 to 14 points between third and sixth grade.

Similar to what was observed in the third grade of elementary school, when adding the school variables, the positive effect of the family's socioeconomic level, or its capacity for self-selection in Language results, tends to decline. This drop was slightly less than that observed in the third grade. Ecuador is the country where this effect is most reduced (down 18 points, from 33 to 15 points), followed by Peru, where the positive effect decreases by 14 points (from 23 to 9 points).

With regard to repeating grades, there is a small reduction in all of the countries examined, the largest being in Ecuador, where the negative effect declines from 37 to 33 points. Comparing the effect of this factor with what happened in third grade also shows a small reduction, except in the case of Ecuador, where the negative effect increases by nearly 13 points.

With respect to the mother's education, the same trend is maintained when only family variables are considered, and it is mostly not significant, with the exception of the first two educational levels in Ecuador, the third educational level in Guatemala (positive effect), and all educational levels in Peru. In turn, all of the

effects mentioned, both negative (Ecuador and Peru) and positive (Guatemala), show a small decrease when school variables are included.

Attendance of preschool remained a non-significant variable, continuing the trend observed previously.

When considering rurality, in the sixth grade of elementary school, it only has a significant effect in Guatemala. In this country, the effect is reduced by nearly half compared with that observed in the third grade of elementary school (from 18 to 10 points). In Peru, this factor becomes insignificant, which could indicate the reduction or elimination of differences in educational results in the sixth grade of elementary school according to the type of school administration.

In infrastructure, only in Ecuador does this factor remain significant with a positive effect on educational results. There is also a slight increase in its effect from 6.7 to 7.4 points. In the other countries in which this factor had small significant effects (Colombia and Peru), these became insignificant.

The organization of the classroom is a factor in which the countries examined show dissimilar results, the negative effect only being significant in Ecuador and Guatemala. It should be noted that the effects of this variable should be understood inversely, that is, as problems in the organization of the classroom, hence its negative effect. This is the only factor for which the same values were obtained for the countries in which it was significant (−5.72 points).

The socioeconomic level of the school remains significant in explaining educational outcomes. Two trends can be observed in this regard: one with the reduction of its positive effect in Colombia and Ecuador (from 39 to 31 points and from 44 to 36 points, respectively) and another with an increase in its positive effect in Guatemala and Peru (from 11 to 14 points and from 23 to 33 points, respectively). We therefore see possible paths to reduce and increase the dynamics of school segregation in the education systems of the four countries. The combination of this with the socioeconomic level of families brings into question the importance of socioeconomic level as a cross-cutting factor between the family and the school in order to close the educational gaps between children who speak an indigenous language and those who do not.

Finally, having teachers who speak indigenous languages has a significant negative effect on educational outcomes in Ecuador and Guatemala (14 and 9 points respectively). This would be connected to the problems faced by both indigenous and non-indigenous children with regard to teachers' lower proficiency of the indigenous language and the problems of implementing appropriate intercultural educational strategies. The absence of this variable in the third grade of elementary school limits the possibilities to compare this factor within schools and throughout the school trajectory.

When observing educational results in Mathematics in the sixth grade of elementary education (Table 3.10), four factors that have significant effects are consistently identified: speaking an indigenous language, the family socioeconomic level, repetition of grades, and the school socioeconomic level. The first of these, speaking an indigenous language at home, shows reduced and eliminated negative effects in the cases of Ecuador and Colombia, respectively. In Colombia, it is interesting and

important to eliminate it as a significant factor with a negative impact on educational outcomes, indicating possible success in the strategy of teaching and learning processes in Mathematics. On the other hand, in countries where the negative effect of this factor increases, what is seen in Peru is striking, where this factor goes from not being significant to having the highest negative effect in the group of countries analyzed (19 points). In other words, in the case of Peru, schools would operate as mechanisms of progressive school segregation rather than reducing the gaps between children who speak indigenous languages and those who do not. Finally, in Guatemala there is a small increase of less than 1 point in the negative effect of the factor, suggesting it is a stable factor.

With regard to the family's socioeconomic level, there is generally an increase in the positive effect in all the countries, with the exception of Peru, where a significant drop is observed (from 17 to 9 points). In the countries where the positive effect of this factor increased, the largest rise was in Ecuador (from 6 to 16 points), followed by Colombia with an increase from 11 to 13 points, while in the case of Guatemala the family SEL is significant, with a positive effect of 6 points.

Repetition of grades is a factor that has great explanatory power for outcomes in Mathematics, with the main tendency being a reduction in the various countries, with the exception of Ecuador where there is an increase from 15 to 21 points. Among

Table 3.10 Educational results in sixth grade of elementary school, with school variables: Mathematics[1]

	Colombia	Ecuador	Guatemala	Peru
Indigenous	−5.32	−14.87	−9.29	−19.04
SEL	12.88	16.04	5.69	8.59
Repetition of grades	−17.58	−21.17	−9.53	−16.35
Mother has no education or incomplete elementary education	5.47	−34.20	−3.03	−21.48
Mother has complete elementary or incomplete secondary education	−0.54	−32.06	−3.46	−17.32
Mother has complete secondary or incomplete tertiary education	−5.92	−23.40	12.76	−7.24
Attendance of preschool	0.52	5.41	6.70	−1.64
Percentage of children who indicate that a teacher speaks an indigenous language	−0.33	−15.25	−11.17	−1.96
Infrastructure	1.08	6.64	−1.57	11.74
Classroom organization	−2.90	−7.02	−8.86	−3.28
Rural	4.72	−6.03	−7.22	5.58
Socioeconomic level of the classroom	22.56	35.13	11.50	29.08
Constant	497.92	526.24	487.89	509.78

[1]As in the previous sections, the magnitudes of the effects of each factor are understood as points on the respective standardized test, in this case Mathematics
Source Prepared by the authors

the countries in which this factor decreased, Peru showed the largest reduction (from 21 to 16 points), while in Colombia and Guatemala there were drops of around 2 points (from 20 to 18 and from 12 to 10 points, respectively). These decreases are is interesting, insofar as the countries are succeeding in reducing the negative effects of repeating grades on education outcomes throughout the elementary school cycle.

The negative effect of the school socioeconomic level shows an increase in the majority of the countries, with the exception of Guatemala where we observe a small reduction (less than one point). At the same time, it is the most important factor in explaining the results of mathematics in the sixth grade of elementary school. Of the other countries, Ecuador shows the greatest positive effect (35 points, and an increase of 13 points). In the case of Peru this factor reaches 29 points, up 16 points, while in Colombia the factor reaches 23 points (increasing 4 points). Considering this, the possible increase in the dynamics of school segregation and the importance of the social composition of schools should be noted.

The educational levels of the mothers, the infrastructure, the organization of the classroom, and the fact that the teachers speak indigenous languages in the classroom are factors in which one pair of countries show significant results while the others do not. With regard to the mother's education, Ecuador is the only country where a significant negative effect is observed at all educational levels of the mother, which is also very significant (34, 32, and 23 points at the first, second, and third educational levels, respectively). In terms of infrastructure, significant effects can be seen in Ecuador and Peru, at 7 and 12 points, respectively, with a small increase in the case of the former regarding results in the third grade of elementary school and a larger increase in the latter (from 2 to 12 points).

Classroom organization has significant negative effects on educational outcomes in Ecuador and Guatemala (7 and 9 points). The same is true for teachers speaking indigenous languages in classrooms, but this has greater negative effects in Ecuador and Guatemala, at 15 and 11 points, respectively. This latter factor has a negative effect on both Language and Mathematics in the same countries, although it is greater in Mathematics, which could indicate that, in spite of not generating the desired positive effect, it may have a better impact on Language than on Mathematics.

Attending preschool and the fact that the school is in a rural area are factors that remain insignificant in both the third and sixth grades of elementary school. In the case of Guatemala, which was the only country where these factors had significant (positive) effects, they cease to be so in the sixth grade of elementary school.

3.8   Conclusions

The gaps between indigenous and non-indigenous students in Mathematics in the third grade of elementary school are smaller than those in Language in the same grade. This is a common trend in learning, since differences in the sociocultural level of families are often displayed mostly in learning outcomes in reading, while such disparities in cultural characteristics are not equally apparent in Mathematics.

This is often because schools are the main source of development for mathematical knowledge and families generally have greater influence on vocabulary development and early reading, and a greater gap is observed in the Language area for this reason (Heyneman, 2004).

As we can see, there are significant differences in most of the variables used to construct the comparison of the two respective groups (indigenous and non-indigenous), with the exception of the variables of repetition of grades and the mother's educational level, specifically where she has no education or incomplete elementary education or complete elementary education but incomplete secondary education. In terms of the socioeconomic level, it can be observed that, although the average is negative for both groups, for indigenous people it is worse than for non-indigenous people. We also found that indigenous people repeat grades more often, are less likely to attend preschool, and live mostly in rural environments compared with their non-indigenous peers. In terms of the mother's education, there is a higher proportion of mothers of indigenous children who have no education or incomplete elementary education and of mothers who have complete secondary education and incomplete tertiary education.

Given this scenario, the question that arises for all cases (third and sixth grades, urban and rural) is: what happens with regard to the differences that continue to exist, which neither the socioeconomic nor the school variables can explain? The answer probably lies in two aspects. First, there is a language barrier, given that the tests are in Spanish, which leads one to believe that the tests could have a language bias in the case of indigenous children that affects the validity of the inferences that can be drawn from their results (Treviño, 2006). Secondly, it is plausible that cultural barriers play an important role as well. Aspects such as the learning methods used or the prevalence of analytical thinking over holistic thinking in school, among other aspects examined by cross-cultural psychology, point to relevant barriers that may affect indigenous children's ability to develop learning in the same way as their peers who are raised in accordance with the teaching and learning patterns of Western culture (Cole, 1996; De Haan, 2000; Price-Williams, 1975; Treviño, 2006).

In this context, it is noteworthy, for example, that the differences are much greater in Language than in Mathematics. This may be due to the fact that in Language the two barriers mentioned above (language and cultural paradigm) operate more strongly, while in Mathematics the second element is more important. Likewise, it is feasible that the family environment has a greater impact on the results in Language and this is less so in the case of Mathematics because schools are the main sources of the formal structure of this knowledge (Heyneman, 2004; Treviño et al., 2010).

A third factor that might help explain this lies in the specific characteristics of each school system reviewed and the way in which strategies are developed in EIB. When observing the case of Colombia, the nation in our analysis with the best average educational results for both indigenous and non-indigenous children, it is notable that its strategy for EIB includes providing a high degree of autonomy over the educational process as a whole, but supported by resources and appropriate forms of management and administration, which favor the development of interculturality. On the other hand, if we look at Guatemala, which is the country with the highest proportion

of indigenous population among those included in the analysis, where the peoples nevertheless have autonomy, this is the case more because of the lack of resources for the development of interculturality than due to declared autonomy and institutional management. This may affect not only the academic results, but also, and more importantly, the entire process of socialization that the teaching–learning dynamic entails. Ecuador, which has had an appropriate institutional framework for managing interculturality, has suffered from other deficits in resources and infrastructure that could explain both the difference between academic results and the low levels of these results among indigenous and non-indigenous children. Finally, in Peru it is interesting to note that, in spite of the various intercultural initiatives that are being carried out, differences continue to exist and are exacerbated by the significant effect of the school socioeconomic level.

A fifth element that makes it possible to obtain a better understanding of the analyses presented here is that the processes that occur within classrooms and which are associated with elements of teacher training (teachers have appropriate intercultural training, are bilingual, with abilities to manage and change the teaching and learning process) and with the institutional characteristics of schools (the intercultural plan is managed and conducted throughout the teaching and learning process with appropriate curricula and assessment instruments, among others). Although this study did not include aspects related to that level, we are aware of its necessity and importance. The elements considered make it possible to understand the processes and factors that are in some way antecedents and conditions of classrooms and schools, with which they must work and, in many cases, have to deal with (as is the case with inequalities that are established in the socioeconomic level of the families).

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Chapter 4
The Educational and Language Policy Demands of the Indigenous Peoples of Chile: A View From the Perspective of Linguistic Rights

Elisa Loncón

4.1 Introduction

4.1.1 Language Policy

In 1994, Chiodi and Loncón (1999) warned about the chronic inequality between Spanish and *Mapudungun*,[1] as well as the consequences for the *Mapuche* language due to the superiority of Spanish, identifying the following problems: (a) perpetuation in orality in a context of generalized literacy, (b) paucity of intellectualization and lack of formal records in the knowledge of modern and universal culture, (c) lexical impoverishment, (d) linguistic acculturation, (e) substitution and displacement, (f) danger of dialectal fragmentation, and (g) lack of social prestige and weakening of linguistic loyalty. In the country, it is not only *Mapudungun* that faces these problems, but they are also common to the rest of Chile's indigenous languages, as some sociolinguistic studies have contended (Gundermann et al., 2007; UNICEF, 2009): thus, all of the languages have suffered the same fate, that is, firstly their displacement and even their eventual disappearance. In cases like this, only policies aimed at improving the status of these languages and normalizing their use can halt the problems mentioned. For this reason, a new language policy is required, which will be responsible for balancing the functions of languages that are in contact and for providing them with equality in public use.

Language policy is understood as the set of decisions and actions promoted by public authorities, the main objective of which is one (or more) language(s) in its (their) sphere of influence, and which is rationally oriented towards aims that are

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[1] The *Mapuche* language.

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both linguistic (corpus of the language, its status, and/or its acquisition) and non-linguistic (status) (Varela, 2007). There are two aspects to language policy: that which is responsible for regulating the public functions that correspond to the languages in contact, or *status planning*; and that responsible for linguistic development and standardizing and regulating the weakened language. At the same time, there are various models of language planning, one of which is the gravitational model (Calve, 1999). This is based on the principle that languages are linked together by bilingual speakers and multilingual scenarios are presented in the form of a gravitation of peripheral languages around a central language. This seems to be a more amenable model to address the contributions of languages in contact, which will undoubtedly have to be reviewed when designing a planning program for indigenous languages in Chile.

Changing the language policy for indigenous languages requires the willingness of those involved. Two decades ago, the *Mapuche* people's desire to demand a change in the situation was not visible; instead, many of them gave up their language and identity as an alternative way of integrating into Chilean society. However, the situation is different now: the people have advanced their own agenda for the recognition of their languages in a Bill of Linguistic Rights and have mobilized to achieve the officialization of the *Mapuche* language. In Chile there is now a movement for linguistic revitalization that is based on several points, including linguistic rights and intercultural bilingual education. This considers that the educational system and the school are the spaces to contribute to changing the hegemonic language policy: the school is the fundamental place of education where the languages, the knowledge, and the values of native peoples should be taught.

Conceptually, linguistic rights are a part of basic human rights (Hamel, 1995): language is related to the identity of human beings, to culture, being the instrument of communication through which feelings, emotions, and affections are expressed. But going beyond this, languages support people's creativity and cognitive development, so much so that learning is made more difficult when it is not conducted in the mother tongue. Language is also part of the human condition, because human beings are distinguished from other species by their highly creative language capacity (Chomsky, 1999): with a finite number of signs, it is possible to produce infinite sentences. For example, under normal conditions, if we take the 26 sounds of the *Mapuche* alphabet, we can make infinite combinations to form words and produce an infinity of phrases, and with them create worlds that do not yet exist, talk about the past or about everything that is possible. This is the case with all languages, since all of them are generated from human beings' own language capacity. Regardless of the language, whether it is written, oral, or signed, they all respond to this language capacity.

Language is also linked to people's identity and culture. Therefore, linguistic discrimination against indigenous people—the rejection of the native language by mainstream Chilean society—has caused a great deal of damage to the self-esteem of many generations and, as a consequence, has led to the loss of languages: many people, in order to avoid suffering, have renounced their native languages. This is what has happened to the *Mapuche*, *Aymara*, *Yaganes* and so many others in Chile

and Latin America. The prohibition of speaking indigenous language in school or the rejection of the language is not a solution for indigenous children. In addition to leading to the loss of the language, it does not heal the wounds or repair the damage of discrimination, nor does it halt the new generations' search for identity, who in many cases, already without a native language, continue to rethink their identity in connection with a lost language. This is the case of the *Likan Antay* and *Colla* peoples of Chile, who have at times proposed adopting a neighboring language.[2] Languages are also the bearers of the knowledge of a whole civilization, so their loss implies the loss of a culture and, therefore, great damage to the knowledge of humanity.

Given the importance of languages and linguistic rights for individuals, peoples, and cultures, various countries in Latin America (Argentina, Bolivia, Colombia, Ecuador, Mexico, Paraguay, and Peru, among others) have enshrined the express recognition of the right of indigenous peoples to preserve their languages in their political constitutions. This has involved great challenges for these countries, including ending the prejudices that have resulted in discrimination against speakers of native languages and advancing in the equality between languages decreed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1954.

Language rights have also been protected in several international instruments for the protection of human rights, such as the 1994 Barcelona Declaration of Linguistic Rights, Convention 169 of the International Labour Organisation (ILO), and the United Nations Declaration on the Rights of Indigenous Peoples. The latter two of these refer specifically to indigenous languages. The United Nations Declaration on the Rights of Indigenous Peoples states:

> Indigenous peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons (Article 13).
>
> Indigenous peoples have the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning (Article 14).

Scientific research has extensively demonstrated the advantages of bilingualism or multilingualism (Baker, 1997; Cummins, 2002; Hamel et al., 2004; López & Küper, 1999): it is argued that speaking more than one language allows for greater language development, broadens cultural horizons, and implies lower risks of mental illness. Bilingualism also facilitates the learning of other languages, whatever they may be. For example, in Mexico there are many indigenous communities who are bilingual in indigenous languages: in Oaxaca, the *Triqui* people speak the *Mixtec* language, Spanish, and some of them speak English, in addition to their own *Triqui* language. They have become multilingual, empowered by contact with other peoples and by the effect of temporary migration to the United States.

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[2] This approach was discussed at the II Congress of Indigenous Languages of Chile, in 2011, where members of the *Likan Antay* people said that this could be a solution to the loss of the grammar of their language.

Chile has lagged far behind in the development of multilingualism and the protection of indigenous languages. Taking up this challenge requires a dual cultural change: reduction of the indigenous language from oral to written form, and moving away from the monolingual mainstream society rejection of indigenous languages to their recognition, which involves their appreciation and knowledge, and overcoming the racism and prejudices that have existed for decades. It also implies the recognition of the rights of peoples and the reconsideration of a Chilean identity with indigenous roots that is currently unknown or unassumed. As previously stated, an educational program is needed to strengthen bilingualism and interculturalism. The Intercultural Bilingual Education Program currently being implemented by the Ministry of Education is very weak in terms of economic resources and specialist staff to meet the challenges involved in developing bilingualism in indigenous languages.

4.1.2   Intercultural Bilingual Education

There are authors who claim from a critical perspective that the intercultural approach has not been implemented in Chilean education and there is very little bilingualism. The survival of indigenous languages is due to the resistance of the peoples, of the speakers themselves, and not the policies of the state. Even now, it is still the peoples and the speakers of their respective languages who hold out the greatest hope for a new language policy. In order to explore this further, the concepts of interculturality and bilingual education are briefly reviewed below.

For UNESCO, "interculturality" refers to the equitable presence and interaction of diverse cultures and the possibility of generating shared cultural expressions, acquired through dialogue and an attitude of mutual respect. The notion of interculturality has changed over time: it is now claimed with greater certainty that in order for education to be intercultural, for dialogue to exist between cultures, it is essential to strengthen intracultural aspects (Mato, 2008; among others) from one's own position, the local sphere. Interculturality as a pedagogical and methodological approach allows for learning that is situated, culturally relevant, and of social relevance (López-Hurtado, 1996); working with cultural diversity in the classroom promotes new forms of learning and teaching. In the political sphere, it implies assuming a position to change the asymmetric relations in the cultural, social, and educational areas that characterize the contact of the hegemonic society with minority peoples (Schmelkes, 2002).

In other words, interculturality is a political and pedagogical approach that is constructed in the pedagogical space, in practice, in the dialogue between different knowledges and cultures (of the students, the teachers, the curriculum, and others). The national curriculum is not fixed or impossible to modify; it is in constant negotiation between those who are involved with it (De Alba, 1991): students, teachers, the institutional educational project, and parents are all actors who negotiate the content of the curriculum. The intercultural approach is a pedagogical strategy that fosters negotiation, dialogue between cultures and, through this, transforms education and

the school. Intercultural pedagogical action should validate that which is one's own or that which is intracultural, but should also go beyond this, to the knowledge of others, problematizing one's own reality based on the other, with national content. For this reason, it is necessary for the participants in the class, a course, a school with an intercultural focus, to speak from their own cultures; from their memory, knowledge, and experiences. However subjective they may be, they are important. If one does not value what belongs to oneself, intercultural dialogue is not possible and the reproduction of cultural hegemony continues.

Intercultural bilingual education proposes the development of additive or balanced bilingualism between the mother tongue and a second language; for example, the indigenous language (*Mapudungun*, *Quechua*, *Yaghan*, etc.) and Spanish. In Chile, due to the displacement of the original languages, the mother tongue of most indigenous children is Spanish and the offer of state policy is to teach the indigenous language as a second language.

The lack of concern for native peoples and for the protection of their rights is also due to the structural racism established in state institutions and characterized by what Schmelkes (2002) identified as cultural, educational, social, political, and economic asymmetries. Cultural asymmetry is expressed in the diglossia in which indigenous languages exist, where Spanish is the language of culture and all communication. This is coupled with the low self-esteem of indigenous people, which is the result of a lack of appreciation of their culture and identity: languages do not have public spaces in which to be practiced. In addition, there are problems of discrimination and xenophobia. Social and educational asymmetries are perceived in the reduced access of indigenous students to higher education and in the fact that cultural linguistic rights are not respected throughout education. The political asymmetries can be seen in the criminalization of the peoples' demands by the state, where they claim water and land, and denounce the economic asymmetries that are expressed in poverty, marginality, and migration to cities.

4.1.3 The State of Play—The Problem

Chile has historically been a multilingual country with indigenous languages, but this multilingualism has not been recognized. The education system is culturally homogeneous and the exclusive use of Spanish has been encouraged. As a result of this situation, and according to studies by the National Indigenous Development Corporation (CONADI) (2007), there are four vital indigenous languages (*Aymara*, *Quechua*, *Rapa Nui*, *Mapudungun*), three extremely vulnerable languages (*Likan Antay*, *Kaweshkar*, and *Yaghan*), and two peoples that have definitely lost their languages: *Diaguitas* and *Collas.*

Since 1993, with the adoption of Indigenous Act Nº 19,253, a process of opening up to indigenous languages and cultures has been underway: the Indigenous Act created the Intercultural Bilingual Education Program and initiated various pilot experiments in Intercultural Bilingual Education (EIB, by the Spanish acronym) in

mainly *Mapuche*, *Aymara*, and *Quechua* areas. Later, in 1996, the Ministry of Education's Intercultural Bilingual Education Program (PEIB – MINEDUC) was created. This defined the objectives and minimum compulsory content for the Indigenous Language Subsector (SLI) in 2006. Then, in 2009, Decree 280 was approved to implement teaching of Indigenous Language (IL). The decree states that IL will be taught in schools where there the proportion of indigenous students is greater than 20% in first grade, 30% in second grade, and 50% in the higher grades, and also establishes that IL will be taught in the four most vital languages: *Quechua*, *Aymara*, *Mapudungun*, and *Rapa Nui*.

The legal framework for Intercultural Bilingual Education is comprised by different instruments, including the Convention on the Rights of the Child (Article 30), ILO Convention 169, ratified by Chile in 2008 (Articles 28 and 30), and the General Education Law of 2009. There are also the Academies of the *Aymara*, *Rapa Nui*, and *Quechua* Languages, and a recent resolution from the General Comptroller of the Republic on the official use of the *Mapuche* language in the district of Galvarino (REFS Nº 97,588/13), dated June 20, 2014.

Currently, just over 1400 schools in the country provide intercultural bilingual education, which involves teaching the subject of Indigenous Language as a second language. The rest of the curriculum and all subjects are taught based on the hegemonic culture without an intercultural approach, which undermines the implementation of the subject of IL and the possibilities of developing bilingualism.

This goes some way towards explaining the 11% decrease in *Mapudungun* speakers since 2006 (Centro de Estudios Públicos, 2016). In order to develop bilingualism, comprehensive and transversal educational language policies are required in the education system and in all public institutions, an effort that goes beyond the scope of indigenous peoples and which assumes Chilean society is jointly responsible for maintaining the language. Exploratory studies on urban EIB confirm that the progress of the program has been limited to affecting the variable of school coexistence (Valdés, 2014) and has not increased bilingualism.

Although there is an EIB education policy, it is insufficient and does not take the indigenous reality into account. It is ruralist and indigenist (Williamson, 2012), and is not implemented in urban areas despite the fact that most indigenous people now live in urban centers. The city of Santiago, for example, accounts for almost 70% of the urban indigenous population, which remains scattered across the marginal districts of the city (Peñalolén, La Pintana, Cerro Navia, among others) (Abarca Carimán, 2005). There is also no educational offer of teaching IL as a first language to serve students whose native language is an IL (*Mapuche-Pehuenche* and *Rapa Nui*).

Other problems identified in the implementation of the EIB include: (a) the lack of methodology to teach indigenous language (Loncón, 2014; Treviño et al., 2012; Quidel, 2011); (b) the critical lack of teachers trained in a bilingual and intercultural approach; (c) the lack of educators with the linguistic and pedagogical skills to work on implementing language teaching in the classroom; (d) the lack of indigenous language teachers specializing in teaching languages (as a native and second language); (e) the lack of curricular technicians, linguists, and specialized human resources; (f) the PEIB excludes mainstream Chilean society from the intercultural

area and the linguistic rights of indigenous children are not adequately protected in schools, even in those that do implement IL as a subject.

Among the problems, there are concerning reports of instances of racism in schools: in a recent workshop held in Galvarino, Araucanía Region (April 2014), convened by the Municipal Directorate of Education, of the various problems in the implementation of the Indigenous Language subject reported by traditional educators, manifest racism from some non-indigenous teachers has been pointed out. It was reported that one principal banned speaking indigenous language in school canteens, while in another case the educator was challenged in front of the children by the mentor teacher, who did not share the *Mapuche* values being taught because they did not consider them part of their Christian practices. On more than one occasion it has also occurred that a teacher has withdrawn from a meeting because the educators spoke in the indigenous language, alluding to the fact that they do not feel respected because the educators did not speak Spanish. One wonders if they would have done the same if the group had spoken in English or French.

Previously, in studies on the implementation of EIB, Treviño et al. (2012) reported on the difficulties that affect the traditional educator in the classroom. What is claimed here is that not only do educators need to improve their technical skills to implement the IL, but non-indigenous teachers would also have to be trained to work in indigenous communities. They urgently need awareness courses in order to value interculturality and bilingualism, to be aware of the contributions that dialogue with diversity makes in education, and the importance of languages and cultures in the era in which we live: the globalized world where the diversity of languages and cultures are part of daily life, which, at the very least, requires that people have greater sensitivity to and empathy with cultural linguistic diversity, since another way of relating to this diversity is needed.

The approach based on word translation persists in the teaching of indigenous languages (Quidel, 2011). In the workshop mentioned above, some educators stated that they teach words during the four years of the Indigenous Language Program (PLI, by the Spanish acronym), complaining that the first year textbook is advanced; others point out that they focus on teaching culture and values, and do so using Spanish; and the PLI is not used to teach in the classroom, nor is there any indication that the communicative approach is developed, or that social functions are taught in the PLI, as indicated in the program. It should be acknowledged that this group included some very creative educators, with extensive experience in teaching indigenous language and who taught traditional texts in a very didactic manner, but these were only two cases in 18.

The revitalization of the *Mapuche* language, as has been said repeatedly, obliges us to think about writing and cultivation of language, a subject not yet on the agenda of EIB policy. This is a long and slow process, which will have to be sustained by increasingly clear awareness of the value of *Mapudungun* per se and within a larger project to revive *Mapuche* culture. European languages have been standardized over the centuries, partly without the intervention of external supports. The fate of *Mapudungun*, however, can no longer be left entirely to the social dynamics of the *Mapuche* community. But as long as this process does not take place spontaneously

(for example, through the emergence of a prestigious literary range), it has to be deliberately stimulated and orientated.

4.2 Cultural-Political Linguistic Resistance

Despite the historical circumstances of the rejection of indigenous peoples and the alarming loss of their linguistic, cultural, and ecological diversity, these people have resisted by maintaining their cultures and languages in some way, preserving their worldviews, community values, and their mutual relationships with the family and with nature. They have also revived practices that had previously been lost, such as the celebration of *Wvñol Xipantv*, the return of the cycle or new year among the *Mapuche* people. It can therefore be said that today there is not only cultural resistance, but that a new stage has been reached: the revitalization of the language and culture, while pride in being the repository of a different culture has simultaneously increased, especially among young people.

Various indigenous authors have spoken of an "indigenous emergency" (Bengoa, 2000) in order to shed light on the efforts to increase the visibility of these peoples and the struggle for their rights. In Chile there is a growing feeling and appreciation for indigenous roots, examples of which include renowned artists such as the *Pehuenche* tenor Miguel Ángel Pellao or the pianist Mahani Tehave, or outstanding soccer players such as Jean Beausejour Coliqueo or Gonzalo Fierro Caniullán. In this context, the movement for the revitalization of indigenous languages and cultures has also gathered momentum and more voices are being raised to defend them. These include teachers, agents of traditional knowledge, parents, women's groups, etc. In the literary sphere, there is a movement formed by poets, writers, and singers who have promoted a literary trend of *Mapuche* poetry. Among them are Graciela Huinao, Elicura Chihuailaf, Jaime Huenun, Teresa Panchillo, and others. Their contributions include writing in indigenous languages and disseminating indigenous culture and demands. There are also groups of young urban people working on the cultural linguistic revitalization of various different peoples, such as the *Aymara, Rapa Nui*, *Kaweshkar*, and *Mapuche.* Also of note is the outstanding role played by the *Komkimapuzuguaiñ Waria Mew* team, comprised by speakers and neo-speakers who teach the *Mapuche* language in Santiago, and the work of the Mapuche History Community, among others, should also be highlighted.

In addition to this, there is nascent political and cultural activism on social media and several campaigns have already been carried out, including the Campaign for the Liberation of Mapuche Political Prisoners, the campaign on the Twitter social network in indigenous languages for International Mother Language Day, the audiovisual campaign *Lenguas Indígenas de Chile* (Indigenous Languages of Chile), which consists of the dissemination of six educational videos in different languages, including *Mapuche Dungun—The Word*, with *Teresa Panchillo*, a *Mapuche* poet; *Mapuche Ülkantun—The Music*, with Genaro Antilao and the *Mapuche* Children's Orchestra of *Tirúa*; *Mapuche Wirin—The Image*, with Eduardo Rapiman, a *Mapuche*

painter; *Aymara—The Andean World*, with *Rosa Quispe Wanka*, an *Aymara* artist; *Yagán—At the End of the World,* with Cristina Calderón, the last *Yagán* speaker; and *Rapa Nui—The Navel of the World*, with Enrique Ika, Juan Pakomio, and Grupo Tautanga.

The movement for the revitalization of languages also includes local territorial organizations, such as the *Mapuche* Territorial Council of Galvarino, Wallmapuwen, the *Mapuche* Autonomous Political Party, and coordination of social organizations at the national level formed by individuals, collectives, and organizations of the different indigenous peoples, known as the Network for the Educational and Linguistic Rights of the Indigenous Peoples of Chile, which has led the public agenda for the revival of indigenous languages since 2007, in addition to others.

4.2.1   Proposed Bill for the Educational and Linguistic Rights of the Indigenous Peoples of Chile

The Linguistic Rights Bill is currently in Congress for debate. The proposal was drafted in the first Conference on Indigenous Languages (2010) and was approved in the second conference a year later. Considering that Chile has systematically violated the rights of indigenous peoples to use their language and practice their culture throughout its history, this is a bill that redresses the rights that have been infringed. It seeks to ensure that the state stops violating rights to use native languages and, for this reason, the proposed bill has clearly defined objectives, linguistic rights, and sanctions. It also creates a body to create and monitor policies for the implementation of these rights. The bill contains five chapters which are ordered as follows: (a) principles and functions; (b) definition of linguistic rights; (c) creation of the Institute of Indigenous Languages; (d) the media; and (e) sanctions, which are briefly outlined below.

The aim of the bill is to protect, promote, and develop indigenous languages (Article 1). Its principles include recognition of all the indigenous languages of all the peoples that exist in Chile as pre-existing languages of the state. It also considers languages that have fallen into disuse or which have already disappeared, bearing in mind that peoples or individuals who have lost their language continue to search for it by mobilizing their individual and collective will. Apparently, as long as individuals recognize that they belong to a people, they maintain the hope of recovering their mother tongue. The languages recognized are "Aymara, Quechua, Mapudungun in all of their varieties; Rapa Nui, Likan Antay, Kaweshkar, Selknam, Yagan, Kakan or the language of the Diaguitas, and Puquina or the language of the Kolla" (Article 4). The latter two are now completely invisible, but their peoples do have descendants who claim them.

The measures outlined to implement the law include the creation of the National Institute of Indigenous Languages, whose main objective is "to recognize the value of, revitalize, and encourage the use of native languages, to evaluate the processes

of implementation and monitoring of cultural language projects, and to promote and sponsor the production and/or dissemination of texts for linguistic standardization" (Article 12, Chapter 3).

With regard to penalties, it is stipulated that there will be "sanctions for the misappropriation of intellectual property of indigenous knowledge in its verbal, written, and graphic expression" (Article 17, Chapter 5).

4.2.2 The Educational Demands

The main educational demands presented by indigenous peoples include: the education system should be intercultural for all Chileans, intercultural bilingual education should be provided to indigenous peoples, and there should be indigenous participation in decision-making on education. Chile is undergoing a process of educational reform and the hope is that, this time, the education system will progress towards making a place for the knowledge and values of indigenous peoples. Interculturality for all underlines that the national education curriculum should teach the knowledge and values of the native peoples to all Chileans, including their histories, the knowledge associated with caring for nature, sports and traditional music, cosmogony, and their worldviews, among other things. These contents should be agreed with the peoples themselves, in accordance with ILO Convention 169, who will have to decide what content they are willing to share with the Chilean majority in an intercultural system of education for all. The proposal of interculturality for all is supported by the approach that only by knowing the indigenous people can society value its native roots and respect indigenous cultures; what is not known cannot be valued (Schmelkes, 2002). The intercultural system will also help to combat the racism that has gravely affected the indigenous peoples through education about values of respect for others and dialogue with diversity. Native cultures contribute different worldviews, other concepts of time and space, other ideas about development; highly enriching knowledge for cultural dialogue, for the complementation of knowledge, and to cultivate the diversity that cultures require to continue growing.

Indigenous participation in decision-making on curricular and educational policy is a proposal that includes the academic assessment of indigenous professionals who are already trained in intercultural bilingual education, some of whom have postgraduate degrees (master's and doctoral degrees) and who have not yet been incorporated into the EIB program. On the other hand, there are non-indigenous technicians, some of whom are unaware of the culture and demands of the native peoples, but who nevertheless have decision-making power on the curriculum and the materials for the indigenous communities with a homogenizing and unilateral perspective, despite the fact that there are indigenous professionals who are trained to do this.

Participation also implies the involvement of territorial councils, organizations, and communities in defining the school that indigenous people want. If a central

theme of the reform is the territorialization of education, this would be the appropriate place for the participation of local organizations in the school curriculum. The proposal also considers the creation of an indigenous unit within the Ministry of Education, the purpose of which would be to influence national public education policies and to mainstream interculturality in all ministries in a coordinated manner, considering that the country needs to be educated at all levels in order to learn to live with diversity. Chile is a country that is accustomed to monolingualism and it will be necessary to change this culture.

Finally, bilingual education for all indigenous children is intended to provide them all with the opportunity to learn their culture and language, as defined by legal instruments, the Convention on the Rights of the Child, ILO Convention 169, and the future Linguistic Rights Act. The subject of indigenous language should be taught in urban areas, so that all indigenous children have the possibility of learning their language. Furthermore, in order for education to be truly bilingual for all peoples, in those communities where the children speak the indigenous language as their mother tongue (as in the case of the *Pehuenche*), education must be provided entirely in the indigenous language, and Spanish should be taught as a second language. Only in this way will the linguistic rights of our children be respected and the quality of education guaranteed.

4.3 Strengths, Progress, Problems, and Perspectives

4.3.1 Strengths

- The creation of IL as a subject and its inclusion in the curriculum is regarded as a positive. The subject has the necessary framework to enable it to provide a good design at the curricular level. For this reason, it is necessary to strengthen its implementation in schools, for which permanent materials and economic resources must be made available, in addition to human resources specialized in bilingual and intercultural matters in order to guide and follow up the program in bilingual schools for the different indigenous peoples.
- The territorial organization and particularly the Galvarino Territorial Council has played a fundamental role in the officialization of the *Mapuche* language: there are 22 communities whose principal demand is the official use of the *Mapuche* language. The organization has a specific agenda to implement the public use of *Mapudungun.* In addition to this, the communal power of the Galvarino Municipality is important, and it currently has a favorable local political participation and is led by a *Mapuche*-speaking mayor, as well as councilors who are also *Mapuche* and *Mapuche* speakers. No less important has been the social mobilization of other communities focused on the linguistic demands. There are other regional councils in areas where there are high concentrations of indigenous communities in Nueva Imperial, in *Pehuenche* and *Lafkenche* areas.

Chile is also undergoing a process of social and political change, with the entry of a bloc of student representatives into Congress being an important landmark in the student social movement. This bloc also backed the presentation of the Linguistic Rights Bill in the Chamber of Deputies.

4.3.2 Weaknesses

- The current EIB program implements interculturalism and bilingualism in a limited manner. It requires minimum 20% presence of indigenous students in the first grade of secondary education (ninth grade) to be implemented, excludes non-indigenous and urban indigenous people, and is limited to basic education, neglecting secondary and higher education. The program also has no impact at the national level, has a small budget, and lacks the human resources required to follow up on the experiences of EIB. These weaknesses have an impact on the application of the program and add to the absence of policies aimed at non-indigenous people, especially non-indigenous teachers in schools where the IL program is implemented, who do not understand its scope or have not reflected on the pedagogical advantages of bilingualism, and who look on the subject of Indigenous Language with disdain because of the racism established in society, obscuring its pedagogical contribution.
- The lack of indigenous people in decision-making spaces is a very significant weakness, since those who effectively make decisions are Spanish-speaking monolinguists, who have no sensitivity to indigenous languages and no conscious experience with the knowledge of indigenous cultures. The EIB Program was initially led by monolingual people. It is very important for this unit to be managed by bilingual people, since both knowledge and experience of the indigenous language influence the decision-making process.
- Although it has now been in force for 23 years, the Indigenous Law has not had the power to guarantee the linguistic rights of indigenous peoples, as they are not enshrined in the regulations. Although the law created the PEIB and a Culture and Education Unit within CONADI, these entities have had little impact on improving educational, linguistic, and intercultural policy.
- Indigenous mistrust of state-driven revitalization policies: *Mapuche* speakers and non-*Mapuche* speakers are not convinced of the benefits that legalization or public use of the *Mapuche* language would produce. Some consider that the current situation of the language, with little dissemination to non-indigenous people, is better: they fear that the language could be used against them in the future, against their own culture or community by non-indigenous people, or that the patenting of traditional knowledge by non-indigenous people will increase. Another issue under discussion is the protection of territorial forms of language use, with regional variations. It is thought that this could be affected when opting for a single written form, for example. It is clear that the speakers and the *Mapuche* who generally take these positions are in a stage of linguistic resistance, but that is confused with

resistance to change. It is very important for the movement to understand that the step towards revitalization of language involves a decision-making process where the speakers and repositories of that language assume more control of it, more participation in decisions, in such a way that the community itself defines the future of its language, which also means regaining confidence in itself, in its organization, and in the movement for language revitalization.

4.3.3 Challenges

- The challenge of the multifunctionality of indigenous languages and the understanding of this need on the part of the users: At present there are those who believe that indigenous language should not be used in new areas, instead restricting it to ceremonial spaces. According to this view, linguistic autonomy would be respected. This type of opinion is not consistent with the demand for officialization and public use of the language, and even less so with linguistic development, so we have to act with caution. When speaking of linguistic rights, assumptions are made that they are exercised in all spaces and in all circumstances where the speaker wishes to communicate. This would reverse the situation of isolation of minority languages, which have been driven to that point by the restriction of their functions and use. It is therefore essential to develop the multifunctionality of language; its use as a language that serves multiple functions, not merely as a language of tradition. It is almost impossible to pigeonhole a language in certain functions, depriving it of its creativity. On the other hand, revitalization involves writing and cultivation of the language, since it is a long and slow process within a larger project of cultural revival. However, language development cannot remain purely under the control of social dynamics, in the characteristics of the communities, as it is essential for it to be promoted and directed deliberately by a specific technical institution with the participation of indigenous speakers who have the necessary technical skills.
- Assessment of academic merit: specialists in indigenous language teaching, didactics, and intercultural curriculum are not abundant. They exist, but many of them do not practice their profession due to lack of employment opportunities. On the other hand, non-experts, even those with little sensitivity to language and culture, are the ones who make the decisions, so it is essential for the academic merit of young professionals to be assessed so that they can participate and appropriate EIB or the IL and open up spaces to do this within the organizations.
- The monolingualism of the mestizos: Chile is a country accustomed to monolingualism, so strategies must be employed to enable Chilean society to appreciate indigenous languages and even to learn and use them.
- Didactics of the indigenous language and methodology of teaching the native language and second language: The didactics of teaching indigenous language is one of the areas most neglected by the bilingual system. Teaching requires strategies and methodologies for both the native language and second language.

Unfortunately, the lack of strategy undermines the process. Misguided and poorly planned approaches have led to the elimination of diversity, and the didactics and methodology must be situated in reality and respond to the objectives of language development. Community education, whether local or endogenous, is not sufficient; the perspective of the people is required, one that promotes a single language, but does not stifle local diversity.

- Enhancing the pragmatic value of language: Implementation of a revitalization policy must be accompanied by the pragmatic valuation of language, as may occur, for example, through positive discrimination policies on the basis of the status of the speaker of the indigenous language, so that they are prioritized for a job or a study program. But that is not all: the use of the language must be made common in public spaces, going beyond the school; in the media, in administration, and it must be strengthened by the determination and conviction of the speakers. Only an act of willingness (which does not rely on pragmatic calculations: *whether or not the language serves society*) can safeguard indigenous languages and provide feedback for language planning work. We are referring, of course, to a social willingness that is sufficiently reinforced and rewarded by an ambitious language policy.

4.4 Conclusions

We have outlined the state of progress of language policy in Chile, specifically regarding the status planning of the language, since this is the area that is most developed. This progress can also be seen in the Bill on Linguistic Rights, and in the request for the *Mapuche* language to be made official. We have also addressed the subject of IL, specifically in terms of its application in schools, concluding that this will be difficult to develop, because a series of pedagogical, linguistic, and teacher training factors influence language education and there has been little progress along these lines. There is no policy for the training of bilingual teachers, nor is there any pedagogical research regarding teaching methodologies or any follow-up and monitoring of the application of the PLI.

The Chilean process of EIB would not have advanced solely with the efforts of the institutions, even with indigenous people involved, since the conditions of cultural domination and political hegemony are so deeply ingrained that they require activism and the social mobilization of organizations and communities, as well as the epistemic vigilance that people who are knowledgeable of other epistemologies can contribute; that is to say, the participation of indigenous knowledge in the school curriculum. It should also be said that interculturality should be for all, but this seems to be a desire only of indigenous peoples, because the non-indigenous educational movement is not demanding interculturality. This is a topic that remains pending and it must be problematized and developed.

In terms of language policy, there is progress in status planning, but there has been no observable progress in corpus planning. This is the greatest challenge for

indigenous languages. Languages need to be well-equipped to be functional in today's world, and to do so they must have a sufficient lexicon, stabilize their grammars with the respective standards, and expand their stylistic resources. All of these tasks should be the concern of the language academies and the future National Institute of Indigenous Languages proposed in the Bill on Linguistic Rights.

The way in which the teaching of the indigenous language is implemented has to be part of a plan for the revitalization of the language that integrates and develops the didactics of teaching, methodologies for the teaching of the native language and the second language, and training of teachers in the indigenous language. However, besides these measures it is also necessary to transform the school culture, to overcome the problems of racism and cultural hegemony, to value the cultural diversity that is sensitive to indigenous languages.

There is a need for indigenous professionals who are committed to the struggle of their peoples. In the academic sphere, there is a need to advance with epistemic and intercultural dialogue. True intercultural debate and the construction of intercultural knowledge are increasingly essential in academia and in counter-hegemonic spaces. The revitalization of language also requires generous contributions from the new generations. Only with the participation of the speakers can we drive towards the future of these indigenous languages.

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Chapter 5
Segregation of Indigenous Students in the Chilean School System

Ernesto Treviño, Juan Pablo Valenzuela, and Cristóbal Villalobos

5.1 Introduction

School segregation, especially on the basis of socioeconomic, ethnic, or racial characteristics, is one of the fields of greatest interest for the design of public policies in countries with high levels of inequality in educational opportunities and low social mobility, such as Chile (Núñez & Miranda, 2011; OECD, 2010). This trend has been accentuated in a global context of educational reforms aimed at improving academic performance through standards-based quality assurance systems (often built on the results of standardized national tests) and strengthening the links between productive development and the quality of education (ECLAC, 2010). The evidence gathered at the international level conclusively shows the direct negative short-, medium-, and long-term effects of school segregation on these objectives (Gorard & Fitz, 2000; Harker, 2004).

This chapter analyzes the conditions of school segregation experienced by indigenous students in Chile. It outlines the main trends of this phenomenon and shows that the conditions and qualities of school segregation by ethnicity depend to a large extent on the context in which the school is located. Based on the results obtained, we propose hypotheses for future studies that seek to identify whether different patterns of school segregation respond to specific educational purposes (such as, for

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example, grouping indigenous students in a school to implement Intercultural Bilingual Education and/or the Indigenous Language Sector) or whether they are linked to other models of student grouping.

The chapter is divided into five sections, in addition to this introduction. The first consists of a review of the literature. The second section presents the data used in this research. The third includes a presentation of the methodology, while the fourth shows the results of the study. This is followed by a conclusion section.

5.2 Literature Review

5.2.1 School Segregation

The international evidence on the effects of segregation is increasingly compelling; nearly 60 years of research in the United States and other countries is conclusive: *separate remains extremely unequal* (Orfield et al., 2012). Thus, creating school systems that concentrate groups of students that share certain homogeneous attributes in certain schools leads to the inequalities of origin of children and young people being maintained and even accentuated.

In addition, school segregation limits educational opportunities and performance from a variety of perspectives: less experienced and less qualified teachers are more often found teaching in schools that serve the most vulnerable groups (Clotfelter et al., 2005, 2006); there are higher teacher turnover rates in these types of schools; there is an increase in lower-qualified peer groups, as the concentration of vulnerable students affects educational opportunities far more than individual poverty status; and they have fewer learning materials and resources (Borman & Dowling, 2010). Also, indicators such as repetition rates, expulsion rates, or school disciplinary problems are much higher in segregated and vulnerable schools than among students from the economic elite. Evidence has also shown that students from segregated schools who enter higher education perform less well in their working lives, earn lower incomes, and have poorer health, reflecting both short- and long-term effects of this phenomenon (Orfield et al., 2012).

Conversely, research has shown that being part of a socially integrated school provides benefits to all children, especially in an increasingly global, diverse, and complex society and world. Integration builds skills to develop more fluid communication and make friends from diverse backgrounds, reduces the willingness to generate stereotypes, and produces higher levels of civil and local responsibility, among other effects (McDonnell et al., 2000; Orfield, 2001). It also creates intergenerational benefits in societies, as individuals who studied in integrated schools are more likely to seek out and be placed in more integrated universities, neighborhoods, and workplaces, and they also transmit a greater disposition towards integrated spaces to their own children (Mickelson, 2001).

For its part, international evidence shows that social polarization in school systems, understood as the creation of extreme groups that do not know each other or coexist in school, is more critical than segregation. Thus, the separation of territories, schools, and communities into groups that are increasingly homogeneous and distant in their characteristics from each other generates tensions in terms of social cohesion and deteriorates the quality of citizenship and civic attitude, being a precursor of higher levels of social conflict (Alegre et al., 2008; Carillo & Vásquez, 2005; Crouch et al., 2009; Esteban & Ray, 2011).

5.2.2 Causes, Effects, Magnitude, and Context of School Segregation in Chile

In Chile, research on school segregation has been scarce, but has increased in recent years (Bellei, 2013). According to this research, it can be concluded that the Chilean school system is highly segregated in socioeconomic terms from the early years of schooling, a situation that remains stable throughout the educational path of children. On the other hand, academic segregation—measured by the tests in the National Education Quality Measurement System (Simce, by the Spanish acronym)—begins in the first years of elementary education at intermediate levels, growing systematically as children progress towards the end of elementary education and then into secondary education. Thus, by 10th grade, academic segregation reaches levels of hypersegregation, similar to those observed when only the socioeconomic attributes of students are considered (Valenzuela et al., 2014; Villalobos & Valenzuela, 2012).

Socioeconomic segregation is much higher among students attending subsidized private schools, at least during the first few years of schooling (Elacqua, 2012; Flores, 2008; Mizala & Torche, 2012; Valenzuela et al., 2009, 2010). The intertemporal evolution of this situation shows that, since 1999, the levels of socioeconomic and academic segregation have systematically increased (Elacqua, 2012; Valenzuela et al., 2010; Villalobos & Valenzuela, 2012). However, since the implementation of the Preferential School Subsidy Law (SEP, by the Spanish acronym) (although with evidence only for fourth-grade students) socioeconomic segregation has been reduced between students from vulnerable groups and students from medium-ranking groups. Despite this progress, segregation between students from medium–high and high socioeconomic groups and the rest of the population persists, because the schools these students attend have not been affected by the implementation of the SEP (Valenzuela et al., 2013a, 2013b).

Meanwhile, international comparisons show that Chile has the highest levels of socioeconomic segregation among countries on which there is information. For example, among the 65 countries that participated in the PISA 2009 test, Chile was rankled second, a scenario that was consistent with the results of the PISA 2006 test (OECD, 2010; Valenzuela et al., 2010). This is consistent both for students from lower and higher socioeconomic levels (SEL).

A study on the polarization of the school system (Villalobos & Valenzuela, 2012) shows that the conditions of separation between vulnerable students (the 30% from the lowest socioeconomic levels) and better social conditions (the 30% from the highest socioeconomic levels) are extreme and increase over time. This means that it is almost impossible to find students from these two social groups in the same school throughout their entire school lives, a situation that is repeated when analyzing the middle and upper social groups. It is only possible to identify schools where social integration occurs between families of vulnerable groups and families of medium groups (Valenzuela et al., 2013a).

In addition, school segregation in Chile exceeds residential segregation in most districts in the Metropolitan Region of Santiago and at national level (Elacqua & Santos, 2013; Valenzuela et al., 2009). This means that the school system *adds* segregation to the segregated geographic location of households according to the socioeconomic level. There are three factors associated with this higher segregation. First, the characteristics of demand or the preferences of parents are relevant, since they seek a specific type of school for their children, where they share similar socioeconomic or academic characteristics with other children, based on fear and/or rejection of the "other" (Wormald et al., 2012). Secondly, the institutional design and the educational offer also contribute to segregation, since schools with different types of funding are usually established in communities according to the socioeconomic level of the population. Thus, schools with shared financing or co-payment reinforce segregation based on families' ability to pay (Mizala & Torche, 2012), along with school selection and retention policies and the existence of Liceos Emblemáticos and Liceos Bicentenario (Emblematic High Schools and High Schools of Excellence, respectively), which also exacerbate school segregation. Finally, residential segregation also makes an important contribution, and, in the specific case of indigenous populations, the distribution of these groups in national territory decisively defines the patterns of segregation, since it reproduces territorial, productive, and historical distributions of the population.

5.2.3   Data on Indigenous Segregation in Chile

In Chile, there is little recent research on the school segregation of indigenous students. A study by Elacqua (2012) analyzes the level and evolution of the segregation of indigenous students between 1999 and 2010, considering only public and subsidized private schools, that is, excluding students who attend paid private schools.[1] The results of that research show that, using the Dissimilarity Index or Duncan Index,[2] the segregation of indigenous students is lower in public schools, while higher degrees of segregation can be seen in subsidized private schools that are run for profit and do not belong to a network, as well as non-profit Catholic schools.

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[1] These schools represent about 7% of the country's total school enrollment.

[2] Methodological details regarding this are outlined in the "Method" section.

Meanwhile, the intertemporal evolution shows an increase between 1999 and 2007, although a slight decrease was observed in 2008, which is consistent with what has been seen regarding the effects of the implementation of the SEP Law in the Chilean school system.

McEwan's (2004) work, while not analyzing the level of segregation of indigenous students, does allow an examination of the link between indigenous segregation and the socioeconomic segregation of students, indicating that indigenous people, by being concentrated among the most vulnerable students, could show a higher degree of school segregation that was solely a reflection of their socioeconomic status.

McEwan attempts to explain the gap in educational performance between indigenous and non-indigenous children in fourth grade (1999) and eighth grade (1997) in Chilean schools through a methodology that breaks down the individual and school levels. When considering the results of the standardized test in mathematics (Simce), we find that non-indigenous students achieve scores about 0.40 standard deviations higher than indigenous students in both years, while in Reading this gap is similar in fourth grade, but somewhat greater for eighth-grade students. Likewise, the econometric analysis shows that between 50 and 60% of the performance gap between non-indigenous and indigenous students is explained by differences in the quality of the schools; another 30% to 40% of the differences are due to family attributes, such as their levels of schooling; and only between 10 and 15% is due to non-observable factors (which is close to 2–3 points on the Simce test) (McEwan, 2004).

This result is relatively similar in both Reading and Mathematics, which could be associated with multiple explanations, such as the development of a form of classroom teaching that discriminates against indigenous students, or factors not observable in families or schools. Therefore, it is not possible to conclude that this gap is explained by an education that specifically and additionally harms indigenous students, at least during basic education.

5.3 Data

The research was carried out using two data sources; on the one hand, the results on the standardized Simce tests between 1999 and 2011 for students in fourth, eighth, and 10th grade. In addition to the above, surveys applied to families and parents/guardians were used during the implementation of this test, the coverage of which exceeds 90% of the students participating in the test annually, allowing valuable information on the student and his or her family to be included in the analyses to be conducted.

Three main variables were used for the segregation analysis. First, a dichotomous variable was generated to indicate whether or not the student belonged to an ethnic group, using questions regarding whether the student's father or mother belonged to an indigenous group, and where students whose father or mother did state that this was

Table 5.1 Descriptive analysis of the variables used in the segregation analysis

Year	Variable	Obs	Mean	SD	Min	Max
4th Grade 2011	Belongs to ethnic group	182,095	0.0980	0.2973	0.0000	1.0000
	SEL Index	198,373	0.0000	1.0000	−2.8966	4.5934
	Simce Mathematics	197,664	259.51	50.399	106.51	382.25
8th Grade 2011	Belongs to ethnic group	174,137	0.0903	0.2867	0.0000	1.0000
	SEL Index	189,890	0.002	1.0000	−2.7897	4.8882
	Simce Mathematics	189,318	259.02	48.724	135.35	395.66
10th Grade 2010	Belongs to ethnic group	177,445	0.0791	0.2700	0.0000	1.0000
	SEL Index	191,452	0.0002	1.0000	−2.8190	5.3034
	Simce Mathematics	191,452	259.36	61.770	106.00	417.00

Source Prepared by the authors based on Simce data

the case they categorized with a 1.[3] For the analysis of the student's socioeconomic level, an SEL index was created using the principal component methodology, based on the combined analysis of three available variables: the mother's education, the father's education, and the per capita income of the student's household. Finally, the student's Simce score on the Mathematics test was used for the analysis of the academic order. The descriptive statistics of these variables for the last year available (2010 or 2011) for each level are shown in Table 5.1.

5.4   Method

This study analyses the school segregation experienced by indigenous students in Chile. In order to study this phenomenon, we used Duncan's Segregation Index or dissimilarity index (Duncan & Duncan, 1955), which has several positive attributes for the objective set out in this study, including its intertemporal comparability and composition invariance (Reardon & Firebaught, 2002) and which has been used in various educational studies (Allen & Vignoles, 2005; Söderströma & Uusitalo, 2004). One potential limitation of this index is that it is not suitable for spatiality (it is an aspatial index), which has been pointed out in previous research (Reardon & Firebaught, 2002).

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[3] Unlike other Latin American countries, in Chile the assignment of a student to an ethnic group is done through cultural self-identification, and not on the basis of knowledge (or not) of a specific language (McEwan, 2004, 2007).

The index is defined as:

$$DA = \frac{1}{2} \sum_{i=1}^{I} \left| \frac{ESi|}{EST} - \frac{EIi}{EIT} \right| \tag{5.1}$$

where i represents an educational establishment within the territory to be analyzed, ES are the students who present the attribute to be analyzed, and EI are the students who do not possess the attribute of analysis in school i; while EST corresponds to the total number of students with the attribute in the territory of analysis and EIT to the total number of students who do not possess the characteristics of analysis in the same territory. Duncan's index varies between 0 and 1, where 0 indicates that the distribution of students with and without the attribute of analysis is similar across schools in the territory of analysis, and 1 implies that students with the attribute are extremely concentrated.

In terms of interpretation, Duncan's index represents the percentage of indigenous students that should be transferred to other schools in order to achieve unsegregated distribution throughout the school system. In addition, the index's levels of segregation can be classified into three categories according to their values: (a) low segregation, between 0 and 0.3; (b) moderate segregation, between 0.3 and 0.45; (c) high segregation, between 0.45 and 0.6; and (d) hypersegregation, above 0.6 (Glaeser & Vigdor, 2001). As a condition, this index requires that the attribute under analysis be dichotomous in order to carry out the analyses (MINEDUC, 2012). Finally, it is important to note that the analysis using Duncan's index is sensitive to the number of students per school. For this reason, the number of students of schools in the territories under analysis should be considered in the interpretation of the results.

5.5 Results

Indigenous students in fourth grade in 2011 represented 9.8% of the country's school population. However, when analyzing the data by decile of socioeconomic level, it can be seen that indigenous students make up more than 21% of students in the first decile, representing the poorest sector of the population. In fact, more than half of indigenous students are in the first three deciles of the socioeconomic level, as can be seen in Table 5.2. This implies that the indigenous population in Chile concentrates high levels of vulnerability, being less likely to belong to the 8th, 9th, or 10th deciles.

In addition, the distribution of indigenous students by school funding type is not homogeneous. Currently, indigenous students are mostly served in municipal schools, followed by subsidized private schools. Likewise, over time there has been a decline in the percentage of indigenous students in public schools and an increase in subsidized private schools (Fig. 5.1), which follows the general trend of transfer of students from public schools to private subsidized schools that the country has experienced over the past few decades (Elacqua, 2012).

Table 5.2 Distribution by socioeconomic decile of students belonging and not belonging to an ethnic group

Decile	Non-ethnic	Ethnic	Ethnic (%)	Non-ethnic (%)
1	13,478	3598	21.07	78.93
2	14,614	2957	16.83	83.17
3	15,544	2326	13.02	86.98
4	15,944	2042	11.35	88.65
5	16,173	1845	10.24	89.76
6	16,843	1493	8.14	91.86
7	17,190	1387	7.47	92.53
8	17,487	1111	5.97	94.03
9	18,140	771	4.08	95.92
10	18,834	318	1.66	98.34
Total	164,247	17,848	9.80	90.20

Source Prepared by the authors based on Simce information

Distribution of Students by ethnicity and type of school in 4th grade (1999 - 2011)

	1999	2006	2007	2008	2009	2010	2011
Particular Pagado	0.46%	0.62%	0.72%	0.77%	0.50%	0.49%	0.77%
Particular subvencionado	42.75%	41.81%	44.09%	45.75%	48.03%	48.22%	49.09%
Municipal	56.80%	57.57%	55.20%	53.47%	51.48%	51.29%	50.13%

■ Municipal ■ Particular subvencionado ■ Particular Pagado
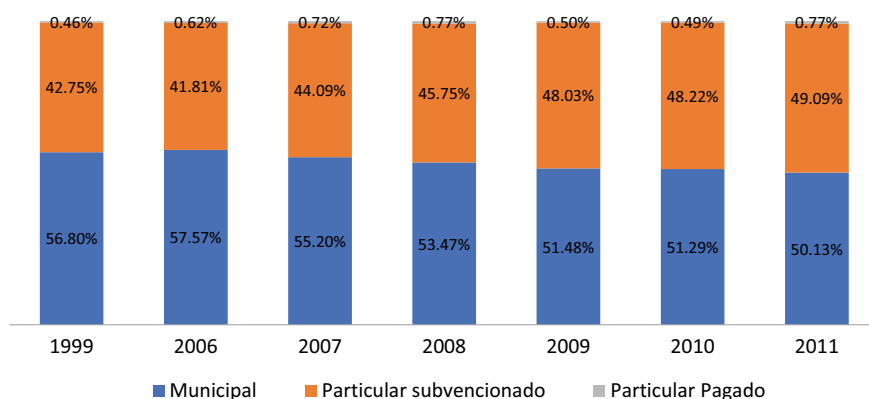
Fig. 5.1 Distribution of fourth-grade students by ethnicity and school funding type, 2011 (*Source* Prepared by the authors based on Simce results)

From the data presented, it is possible to observe that indigenous students are over-represented among the poorest groups and that they mainly attend municipal schools. We should now look at how these students are grouped between the schools.

In general terms, and as can be seen in Table 5.3, the segregation of indigenous students at the national level reaches moderate and high levels. The Duncan index has thus hovered around values from 0.40 to 0.51 at different school levels over the last 13 years. Although the levels of segregation are lower than the levels of

Table 5.3 Duncan index for indigenous students in fourth, eighth, and 10th grade for 1999–2011

Level	1999	2000	2006	2007	2008	2009	2010	2011
4th Grade	0.453		0.455	0.478	0.447	0.479	0.475	0.479
8th Grade				0.459		0.483		0.475
10th Grade		0.514	0.443		0.404		0.429	

Source Prepared by the authors based on Simce results

socioeconomic segregation (Valenzuela et al., 2014), it should be noted that the indigenous population is not distributed homogeneously throughout the national territory, but is instead concentrated in specific regions (as shown in the annexes), so an analysis disaggregated by geographical zones is needed to better understand this phenomenon.

This analysis demonstrates that school segregation varies significantly between regions of the country (see Table 5.4). Thus, ethnic segregation is greater in Region II, from regions IV to IX, and also in Region XIV, although it is within the margins qualified as moderate, which suggests that the segregation of indigenous students is a widespread phenomenon at the national level. There are also significant differences in the levels of segregation when comparing elementary education with secondary education (10th grade). This may be partly due to there being fewer secondary schools in the country, as enrolment that is dispersed and segregated in elementary education tends to be concentrated when moving on to the secondary level. Another possible explanation for this difference is related to the increase in dropout rates in secondary education shown by various studies (Espínola et al., 2011; Santos, 2009), where a larger proportion of indigenous students than non-indigenous students may be expelled from the system.

It can also be seen that in elementary education, socioeconomic segregation is the highest in the school system, followed by ethnic segregation, and finally academic segregation; while for students in 10th grade, ethnic segregation is lower than socioeconomic and academic segregation. According to Table 4.5, this condition is seen in most regions.

This data show that there is significant variation in segregation by region, although levels of ethnic, socioeconomic, and academic segregation remain within moderate ranges in most regions.

However, when the analysis is extended to the lower territorial level, that of the province, the levels of segregation remain within the moderate range and are low in some cases (Table 5.5), with the exception of the province of Parinacota in the Region I Arica y Parinacota (0.615), the provinces of Los Andes and San Felipe in Region V Valparaiso and Linares in Region VII Maule (0.565), where they reach high or hypersegregation levels. On the other hand, it can be seen that segregation at the provincial level decreases as progress is made in the educational system. Thus, in 10th grade, all of the provinces show low levels of segregation (or very close to this level, with an upper limit of 0.3), with Cardenal Caro province in Region VI O'Higgins being the only outlier, with a Duncan index of 0.518.

Table 5.4 Duncan index for ethnic, socioeconomic, and academic segregation for students in fourth, eighth, and 10th grade with information from 2010–2011

Region	Ethnic			Socioeconomic (30% most vulnerable)			Academic (30% lowest performance)		
	4th Grade 2011	8th Grade 2011	10th Grade 2010	4th Grade 2011	8th Grade 2011	10th Grade 2010	4th Grade 2011	8th Grade 2011	10th Grade 2010
1	0.323	0.313	0.322	0.479	0.429	0.474	0.430	0.428	0.486
2	0.432	0.431	0.427	0.464	0.445	0.412	0.353	0.370	0.481
3	0.321	0.273	0.271	0.421	0.447	0.358	0.373	0.365	0.487
4	0.401	0.373	0.249	0.483	0.498	0.489	0.383	0.372	0.455
5	0.459	0.428	0.362	0.496	0.485	0.450	0.388	0.398	0.487
6	0.420	0.426	0.299	0.500	0.487	0.443	0.371	0.360	0.512
7	0.484	0.522	0.312	0.506	0.507	0.437	0.410	0.367	0.419
8	0.458	0.475	0.362	0.520	0.518	0.478	0.372	0.383	0.451
9	0.466	0.427	0.340	0.492	0.509	0.465	0.415	0.381	0.422
10	0.366	0.320	0.266	0.509	0.490	0.448	0.403	0.359	0.451
11	0.267	0.300	0.277	0.418	0.466	0.479	0.309	0.378	0.397
12	0.359	0.321	0.312	0.481	0.470	0.471	0.396	0.415	0.495
13	0.367	0.366	0.310	0.515	0.503	0.490	0.417	0.410	0.521
14	0.402	0.322	0.296	0.495	0.475	0.460	0.368	0.363	0.439
15	0.322	0.305	0.236	0.423	0.466	0.428	0.351	0.435	0.572

Source Prepared by the authors based on Simce results

**Table 5.5** Duncan ethnic index for students in fourth, eighth, and 10th grade by province, 2010–2011

Grade/Province (Provincial Capital)	4th Grade 2011	8th Grade 2011	10th Grade 2010
Arica y Parinacota Region			
Arica (Arica)	0.315	0.301	0.234
Parinacota (Putre)	0.615	0.564	–
Tarapacá Region			
Iquique (Iquique)	0.295	0.272	0.290
Tamarugal (Pozo Almonte)	0.459	0.378	0.266
Antofagasta Region			
Tocopilla (Tocopilla)	0.297	0.315	0.193
El Loa (Calama)	0.244	0.247	0.150
Antofagasta (Antofagasta)	0.289	0.273	0.194
Atacama Region			
Chañaral (Chañaral)	0.377	0.450	0.147
Copiapó (Copiapó)	0.281	0.217	0.280
Huasco (Vallenar)	0.286	0.296	0.197
Coquimbo Region			
Elqui (Coquimbo)	0.368	0.377	0.263
Limarí (Ovalle)	0.403	0.355	0.159
Choapa (Illapel)	0.512	0.414	0.333
Valparaíso Region			
Petorca (La Ligua)	0.483	0.223	0.336
Los Andes (Los Andes)	0.518	0.398	0.302
San Felipe (San Felipe)	0.524	0.448	0.336
Quillota (Quillota)	0.476	0.342	0.320
Valparaíso (Valparaíso)	0.446	0.438	0.363
San Antonio (San Antonio)	0.297	0.336	0.272
Isla de Pascua (Hanga Roa)	0.102	0.311	0.154
Metropolitan Region			
Chacabuco (Hill)	0.392	0.330	0.307
Santiago (Santiago	0.374	0.324	0.318
Cordillera (Puente Alto)	0.303	0.376	0.264
Maipo (San Bernardo)	0.333	0.314	0.311
Melipilla (Melipilla)	0.386	0.395	0.258
Talagante (Talagante)	0.395	0.341	0.282
O'Higgins Region			
Cachapoal (Rancagua)	0.400	0.399	0.303

(continued)

Table 5.5 (continued)

Grade/Province (Provincial Capital)	4th Grade 2011	8th Grade 2011	10th Grade 2010
Colchagua (San Fernando)	0.469	0.505	0.241
Cardinal Caro (Pichilemu)	0.499	0.420	0.518
Maule Region			
Curicó (Curicó)	0.438	0.431	0.286
Talca (Talca)	0.459	0.526	0.292
Linares (Linares)	0.565	0.597	0.296
Cauquenes (Cauquenes)	0.491	0.479	0.244
Biobío Region			
Ñuble (Chillán)	0.513	0.516	0.287
Biobío (Los Ángeles)	0.455	0.419	0.322
Concepción (Concepción)	0.377	0.397	0.296
Arauco (Lebu)	0.374	0.347	0.315
Araucanía Region			
Malleco (Angol)	0.483	0.412	0.325
Cautín (Temuco)	0.453	0.422	0.315
Los Ríos Region			
Valdivia (Valdivia)	0.400	0.318	0.285
Ranco (La Unión)	0.378	0.315	0.236
Los Lagos Region			
Osorno (Osorno)	0.374	0.319	0.263
Llanquihue (Puerto Montt)	0.320	0.291	0.237
Chilioé (Casto)	0.384	0.328	0.202
Palena (Futaleufú)	0.398	0.357	0.143
Aysén Region			
Coyhaique (Coyhaique)	0.216	0.299	0.301
Aysén (Puerto Aysén)	0.252	0.274	0.246
General Carrera (Chile Chico)	0.223	0.292	
Capitán Prat (Cochrane)	0.144	0.113	
Magallanes Region			
Última Esperanza (Puerto Natales)	0.194	0.259	0.203
Magallanes (Punta Arenas)	0.379	0.316	0.327
Tierra del Fuego (Future)	0.242	0.291	–
Antártida (Puerto Williams)	–	–	–

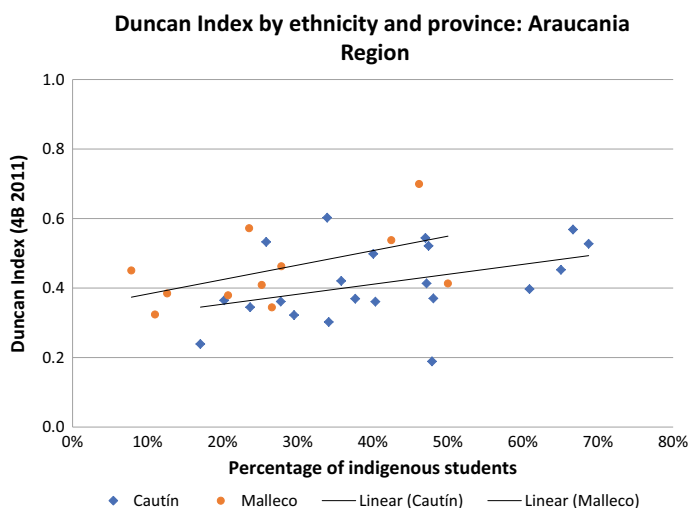*Source* Prepared by the authors based on Simce results
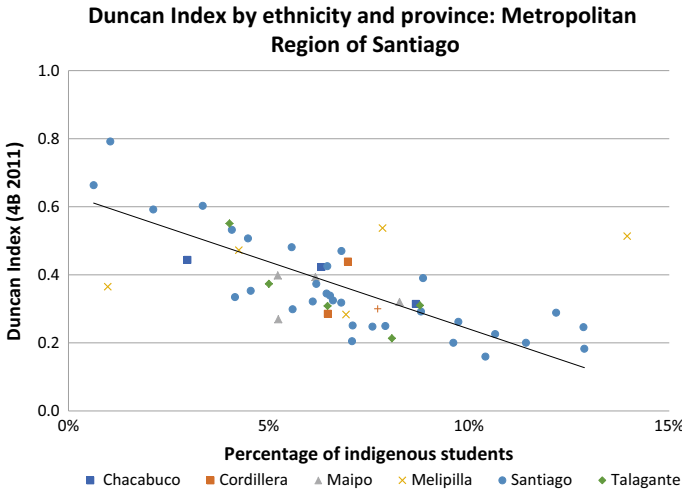
Fig. 5.2 Duncan index according to ethnicity for fourth grade, by district in each province of the Metropolitan Region, 2011 (*Source* Prepared by the authors based on Simce results)

Finally, when we reach the districts, the lowest level of Chile's political organization, there are significant differences between the districts that make up the different provinces. In this case, the analysis concentrates on the districts in the Metropolitan Region and the La Araucanía Region, which show the most striking patterns regarding the concentration and number of indigenous students, allowing a more refined analysis of ethnic segregation, separating it from territorial processes and geographical distribution.

For a better understanding of the results of ethnic segregation by district in these regions, these figures are shown in Figs. 5.2 and 5.3. In these figures, each point represents a district in the respective region, showing the relationship between the segregation index and the percentage of indigenous students at the district level.

The data show that in the Metropolitan Region there is an inverse relationship between the index of dissimilarity and the percentage of indigenous children in the fourth grade in schools in each district (Fig. 5.2). We can thus see the existence of districts with high levels of segregation, close to or above 0.6 on the dissimilarity index, these being districts with a percentage of indigenous population below 3.4% in their schools. In addition, the districts with high levels of segregation are those that concentrate the population with the greatest resources in the region and the country, such as Las Condes (with a Duncan index of 0.79 and an indigenous population of 1%), Vitacura (0.66 on the Duncan index and 0.6% indigenous population), Lo Barnechea (0.60 on the Duncan index and 3.4% indigenous population), and Providencia (0.59 on the Duncan index and 2% indigenous population).

In contrast, in the Araucanía Region there is a positive relationship between the Duncan index and the percentage of indigenous children (Fig. 5.3). It therefore seems that the higher the percentage of indigenous children in the district, the greater

**Duncan Index by ethnicity and province: Araucania Region**

Fig. 5.3 Duncan index by ethnicity for fourth grade, by municipality of each province in the Araucanía Region, 2011 (*Source* Prepared by the authors based on Simce results)

the school segregation of these children. In fact, two districts appear (Vilcún and Lonquimay) with a very high dissimilarity (greater than 0.6), these being host to high populations of indigenous groups. It can also be observed that there are six districts where the Duncan index is high, with values greater than 0.5 and lower than 0.6. These districts are Cunco, Galvarino, Padre Las Casas, Puerto Saavedra, Los Sauces, and Lumaco.

Segregation data for the Araucanía Region, however, should be treated with caution, as the perceived high segregation is due to the combination of a concentration of indigenous population in territories with low population density and few schools. It is therefore possible that a large percentage of the children in some districts are indigenous and attend the nearest school, and this does not indicate the existence of a process of educational segregation, but instead reflects only the residential and territorial segregation of the indigenous communities in these districts. Therefore, in these cases, the segregation would not be the result of any mechanism in the school system, but rather the unequal distribution of the population in the different territories.

Considering the above, and in order to obtain a more accurate picture of ethnic school segregation in the Araucanía region, only those districts with more than five schools in urban areas were selected. In this way, we sought to discard from the analysis the schools and rural territories where there is low population density and, therefore, the locations where the educational offer is limited.

The results of this show relevant changes in the segregation index (Fig. 5.4). First, the district of Teodoro Schmidt changes from a situation of moderate segregation in the previous analysis (0.37) to one of high segregation (0.69), mainly as a result of the elimination of rural schools, where indigenous and non-indigenous students may

Duncan Index by ethnicity: Araucania Region
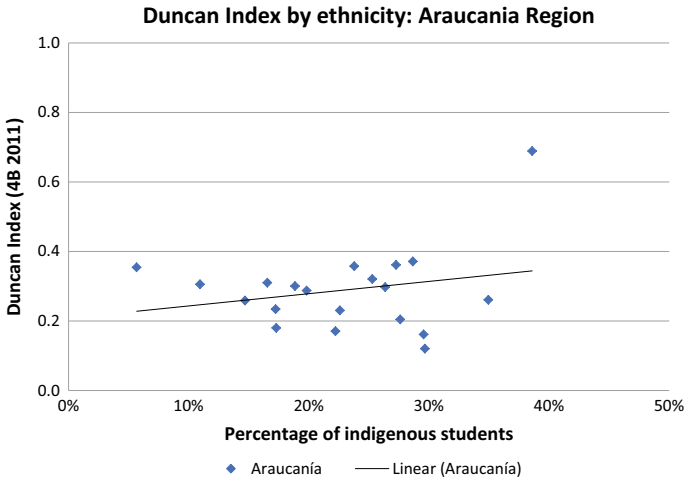
Fig. 5.4 Duncan Index according to ethnic status of urban students in fourth grade, by district with more than five schools in each province of the Araucanía Region, 2011 (*Source* Prepared by the authors)

have coexisted. However, in the rest of the districts, the levels of ethnic segregation decrease, falling to the low to moderate ranges, with the Duncan index varying between 0.12 and 0.37. Finally, although the regression line in the graph suggests a direct relationship between the Duncan index and the percentage of indigenous students, it would not be correct to establish that correlation, since the gradient represented by the line is biased by the extreme data mentioned above and there is only weak evidence for this assertion.

5.6 Conclusions

School segregation can have detrimental effects on children's learning and socialization process in the short, medium, and long term. It can also affect the processes of integration of different groups in society with each other and with society as a whole.

The research carried out shows that ethnic segregation in Chile is a complex phenomenon that is present in different territorial areas, linked to patterns of population settlement and not necessarily implying that the school system creates additional segregation of indigenous students. This makes it possible to add relevant information to previous studies on the subject, since they show that the segregation of indigenous students does not follow the same patterns as socioeconomic segregation, nor to the degrees found in terms of academic segregation. Likewise, we explore the differences in segregation existing at the different territorial levels of analysis (national, regional,

provincial, and by district), showing how the segregation of indigenous students is problematic in certain areas of national territory.

The data analyzed suggest that the elements that may explain ethnic segregation include the concentration of the indigenous population in rural areas, the low population density in those areas, their high level of vulnerability, and their high level of differentiation from non-indigenous sectors of the population. Some authors have pointed to the existence of positive correlations between the polarization of indigenous groups (specifically, *Mapuches*) and social conflicts (Modrego et al., 2008), thus showing the extent of territorial organization in the indigenous population. Clearly, this poses a challenge for territorial policies, which should generate actions, programs, and policies that enable students to coexist with others of different ethnic and socioeconomic characteristics. In addition, it is clear that ethnic segregation in the Metropolitan Region is greater in the districts with the lowest percentage of indigenous students, which also have the highest levels of wealth, which could indicate the existence of a pattern in the relationship between socioeconomic level, membership of indigenous groups, and territorial distribution.

Logically, this implies designing educational policies with regard to territorial and socioeconomic policies. As studies have shown (ECLAC, 2007; Wormald et al., 2013), territorial cohesion and segregation are a problem that generates effects in the economic, social, and educational spheres. For this reason, territorial desegregation policies (Sabatini et al., 2013) should incorporate an educational perspective, making it possible to design and connect these policies with the problems of indigenous school segregation through the promotion of intercultural education policies, the generation of policies with a positive focus, or other types of measures.

However, the study carried out should be considered a first approach to discovering more about the problem of indigenous segregation in Chile. There is still a need for further research to provide methodological and analytical robustness to the proposals. In methodological terms, the application of new indices (such as the isolation index or Morán's autocorrelation index) are elements that would make it possible to contrast the data provided and complement the information generated. Similarly, and in analytical terms, it appears necessary to look more deeply at the causes of indigenous segregation. For this reason, it is necessary to carry out quantitative and qualitative studies that will make it possible to analyze whether ethnic segregation in the districts of these regions is a consequence of the way in which the indigenous populations are established, an express policy of segregation by the schools, or the need to bring together pupils of indigenous origin in a school to offer intercultural bilingual education, while also analyzing the consequences of each of these types of grouping. Obviously, segregation can be due to a combination of the factors mentioned above, but the results can be differentiated depending on the characteristics of the population and the school systems, which is an essential element for the Chilean school system.

Finally, this study raises new questions for studies of segregation in Chile, including two in particular. On the one hand, it is essential to expand discussion about the scale and levels of social research (Revel, 2005) at which segregation is studied. As we have observed, the magnitudes and dimensions of segregation vary

significantly according to the scale on which the phenomenon is studied, so gaining a deeper understanding of the relationships between the different levels and their relations is a challenge for future research in the area. Lastly, it appears to be necessary to conduct further study of the effects and impacts of targeted programs of support for indigenous students and schools (for example, the PEIB) on the segregation and distribution of students, in order to gain a more comprehensive understand of the changes in the education system, thus allowing the projection of new societal and educational challenges for the country, which will make it possible to improve the levels of inclusion, quality, and equity in education.

Annexes

See Tables 5.6, 5.7, 5.8 and 5.9.

Table 5.6 Distribution of indigenous and non-indigenous students by region for fourth grade, eighth grade and 10th grade

Grade	4th Grade 2011			8th Grade 2011			10th Grade 2011		
Region	Ethnic	Non-ethnic	%	Ethnic	Non-ethnic	%	Ethnic	Non-ethnic	%
1	761	2998	20.24	696	2775	20.05	533	2242	19.21
2	786	5882	11.79	753	6021	11.12	683	5395	11.24
3	507	2908	14.85	437	2692	13.97	361	2598	12.20
4	395	7637	4.92	354	7451	4.54	377	7238	4.95
5	773	17,790	4.16	755	18,167	3.99	646	17,457	3.57
6	431	9618	4.29	393	9952	3.80	325	9564	3.29
7	385	10,714	3.47	268	11,191	2.34	313	11,041	2.76
8	1400	20,172	6.49	1207	21,006	5.43	1075	21,026	4.86
9	3192	7327	30.35	2975	8014	27.07	2448	7581	24.41
10	2301	7045	24.62	1994	7046	22.06	1677	6868	19.63
11	339	948	26.34	214	902	19.18	218	783	21.78
12	367	1476	19.91	347	1451	19.30	319	1440	18.14
13	4849	66,716	6.78	4211	59,783	6.58	4281	69,881	5.77
14	915	3263	21.90	839	3338	20.09	679	3205	17.48
15	687	1566	30.49	682	1594	29.96	677	1601	29.72
Total	18,088	1,66,060	9.82	16,125	1,61,383	9.08	14,612	1,67,920	8.01

Source Prepared by the authors

Table 5.7 Duncan index, number of indigenous children and number of non-indigenous children. Metropolitan Region (fourth grade 2011)

Metropolitan Region	District	Duncan index 4th Grade 2011	N ethnic	N non-ethnic	Ethnic (%)
Chacabuco	Colina	0.423	100	1483	6.32
	Lampa	0.315	64	674	8.67
	Til-Til	0.444	6	196	2.97
Cordillera	Pirque	0.285	9	130	6.47
	Puente Alto	0.300	443	5296	7.72
	San José de Maipo	0.439	9	120	6.89
Maipo	Buin	0.269	51	922	5.24
	Calera de Tango	0.398	15	272	5.23
	Paine	0.393	46	700	6.17
	San Bernardo	0.320	272	3018	8.27
Melipilla	Alhué	0.537	4	47	7.84
	Curacaví	0.283	21	282	6.93
	Maria Pinto	0.472	4	90	4.26
	Melipilla	0.365	13	1311	0.98
	San Pedro	0.514	12	74	13.95
Santiago	Cerrillos	0.325	50	707	6.61
	Cerro Navia	0.246	157	1064	12.86
	Conchalí	0.299	78	1316	5.60
	El Bosque	0.200	187	1759	9.61
	Estación Central	0.251	110	1440	7.10
	Huechuraba	0.470	61	834	6.82
	Independencia	0.353	45	944	4.55
	La Cisterna	0.345	77	1118	6.44
	La Granja	0.292	108	1119	8.80
	Florida	0.373	275	4169	6.19
	La Pintana	0.183	279	1887	12.88
	La Reina	0.532	54	1270	4.08
	Las Condes	0.792	23	2181	1.04
	Lo Barnechea	0.603	36	1038	3.35
	Lo Espejo	0.226	83	696	10.65
	Lo Prado	0.289	80	577	12.18
	Macul	0.248	74	901	7.59
	Maipú	0.322	351	5403	6.10

Table 5.7 (continued)

Metropolitan Region	District	Duncan index 4th Grade 2011	N ethnic	N non-ethnic	Ethnic (%)
	Ñuñoa	0.481	69	1169	5.57
	Pedro Aguirre Cerda	0.249	80	931	7.91
	Peñalolén	0.390	190	1956	8.85
	Providencia	0.592	31	1433	2.12
	Pudahuel	0.262	192	1780	9.74
	Quilicura	0.205	168	2205	7.08
	Quinta Normal	0.318	89	1218	6.81
	Recoleta	0.339	111	1589	6.53
	Renca	0.200	134	1039	11.42
	San Miguel	0.507	52	1108	4.48
	San Joaquín	0.425	40	579	6.46
	San Ramón	0.160	104	895	10.41
	Santiago	0.335	124	2858	4.16
	Vitacura	0.664	8	1266	0.63
Talagante	El Monte	0.213	29	330	8.08
	Isla de Maipo	0.308	22	318	6.47
	Padre Hurtado	0.310	61	634	8.78
	Peñaflor	0.373	49	930	5.01
	Talagante	0.551	38	907	4.02

Table 5.8 Duncan index, number of indigenous children and number of non-indigenous children. La Araucanía Region (fourth grade 2011)

Province	District	Duncan index 4th Grade 2011	N ethnic	N non-ethnic	Ethnic (%)
Cautín	Carahue	0.369	107	177	37.68
	Cholchol	0.452	95	51	65.07
	Cunco	0.533	48	138	25.81
	Curarrehue	0.397	56	36	60.87
	Freire	0.498	117	175	40.07
	Galvarino	0.527	99	45	68.75
	Gorbea	0.239	23	112	17.04
	Lautaro	0.420	165	296	35.79
	Loncoche	0.302	85	164	34.14

Table 5.8 (continued)

Province	District	Duncan index 4th Grade 2011	N ethnic	N non-ethnic	Ethnic (%)
	Melipeuco	0.361	23	34	40.35
	Nueva Imperial	0.413	200	224	47.17
	Padre Las Casas	0.521	360	399	47.43
	Perquenco	0.189	34	37	47.89
	Pitrufquén	0.322	80	191	29.52
	Pucón	0.345	62	200	23.66
	Puerto Saavedra	0.568	88	44	66.67
	Temuco	0.365	610	2407	20.22
	Theodore Schmidt	0.370	75	81	48.08
	Toltén	0.544	55	62	47.01
	Vilcun	0.602	114	222	33.93
	Villarica	0.361	192	500	27.75
Malleco	Angol	0.324	62	502	10.99
	Colipulli	0.344	81	224	26.56
	Curacautín	0.450	13	153	7.83
	Ercilla	0.413	46	46	50.00
	Lonqiumay	0.699	48	56	46.15
	Los Sauces	0.572	16	52	23.53
	Lumaco	0.538	45	61	42.45
	Pureen	0.379	29	111	20.71
	Reinaco	0.384	14	97	12.61
	Traiguén	0.463	57	148	27.80
	Victoria	0.409	95	282	25.20

Source Prepared by the authors

Table 5.9 Duncan index, number of indigenous children and number of non-indigenous children. La Araucanía Region (fourth grade 2011), only for urban schools where there are more than five schools per district

Province	District	Duncan index 4th grade 2011	N ethnic	N non-ethnicS	Ethnic (%)
Cautín	Carahue	0.120	54	128	29.67
	Cholchol				
	Cunco	0.310	24	121	16.55
	Curarrehue				

Table 5.9 (continued)

Province	District	Duncan index 4th grade 2011	N ethnic	N non-ethnicS	Ethnic (%)
	Freire	0.371	43	107	28.67
	Galvarino				
	Gorbea	0.180	23	110	17.29
	Lautaro	0.230	75	257	22.59
	Loncoche	0.161	68	162	29.57
	Melipeuco				
	Nueva Imperial	0.261	108	201	34.95
	Padre Las Casas	0.204	129	338	27.62
	Perquenco				
	Pitrufquén	0.297	58	162	26.36
	Pucón	0.287	46	186	19.83
	Puerto Saavedra				
	Temuco	0.300	559	2406	18.85
	Theodore Schmidt	0.689	44	70	38.60
	Toltén	0.361	18	48	27.27
	Vilcun	0.259	31	180	14.69
	Villarica	0.321	151	446	25.29
Malleco	Angol	0.305	68	553	10.95
	Colipulli	0.171	62	217	22.22
	Curacautín	0.354	8	133	5.67
	Ercilla				
	Lonqiumay				
	Los Sauces				
	Lumaco				
	Pureen				
	Reinaco				
	Traiguén	0.358	49	157	23.79
	Victoria	0.234	55	264	17.24

Source Prepared by the authors

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Chapter 6
Reflections on Intercultural Education in Chile and the Worldview of Indigenous Peoples

Ximena Martínez

6.1 Introduction

In the city of Arica, on June 24, as part of the commemoration of National Indigenous Peoples Day,[1] the Intercultural Bilingual Education Program was inaugurated in a local school. As in every official act, students, teachers, and the parents who had been invited gathered in the school's unroofed yard. After singing the national anthem, the school principal came on stage to introduce the guest. He solemnly greeted the authorities present and the rest of the school community. Then, the *Yatiri*, the name given to wise men in *Aymara* culture, dressed in traditional Andean costume, came on to the stage from the side. The man placed his materials on the stage and began the *phawa*, a traditional rite through which coca and alcohol are offered to the *Pachamama*[2] and the *Mallku*[3] asking them to intercede to ensure an activity is successful. The *Yatiri* dropped coca leaves, lit incense, and handed small glasses of alcohol to those around him. Each person had to tip some of the spirit onto the ground before drinking it and repeating a greeting to the earth. Then the *Yatiri* spoke some

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[1] Established during the government of Eduardo Frei Ruiz-Tagle through Supreme Decree Nº 158 of 1998.

[2] The Mother Earth or fertility goddess among the indigenous peoples of the Andes.

[3] In the Aymara worldview, *Mallku* is the spirit of the mountain. *Mallku* represents the geographical summit and the social summit. A spirit that also represents the force and life that emerges from the mountain and bathes the mountains and valleys (See Mamani, 2003).

The introductory story and the reflections presented in this text have been informed both by the institutional bibliographical and documentary review available through the MINEDUC and other educational organizations, and by the personal experiences of the author, who between 2004–2011 worked as a history and geography teacher in the region of Arica y Parinacota.

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words in the indigenous language. After the ceremony, the principal approached the microphone and thanked the guests for their collaboration.

In a second act, the provincial educational authority came onto the stage, thanking the school community and guests for being there. Two children walked towards him, one dressed in a regular uniform and the other in a typical costume of one of the groups that dance to mark the days in the extensive Andean ritual calendar. Both held up a red, white, and blue ribbon and another colored ribbon which were cut by the authorities and the *Yatiri*. This was the opening of the Intercultural Bilingual Education Program at the school. During his speech, the provincial education director spoke about social inclusion and the importance of being aware of, respecting, and valuing indigenous cultures, which—in his words—have been a fundamental part of the construction of the Chilean nation. He recognized the great effort that the government in general and the school in particular were making to open up space for everyone, taking into consideration their cultural differences.

After that speech, the school principal spoke again, describing the signs in indigenous language that had been put up in various rooms of the school. Finally, he asked the audience to stand up and invited them to sing the city's anthem.

Images such as these have become commonplace in Chile's institutional spaces over the last two decades, with schools being one of the places where they are most often celebrated. Certainly, those who organized the ceremony intended to solemnly highlight the changes that would begin to be experienced in the school with the adoption of the intercultural education program. For some students, this would be the first close contact with indigenous culture in such an organized way, far removed from the fossilized images of such things presented in school textbooks. For other students, the rite performed by the *Yatiri*, although familiar, was curious when performed outside the context of their community. For the school community as a whole, gathering together and singing the national anthem would be a demonstration of the appreciation for the good intentions that we, as "Chileans", should have towards "our" indigenous peoples.[4]

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[4] In this chapter, the terms "indigenous populations" and "indigenous peoples" are used to refer to indigenous human groups. Whenever the term "indigenous populations" is used, it is in reference to the definition that the Chilean state gives to indigenous groups under the law, while when the concept of "indigenous peoples" is used, it refers to them from the perspective of international law, which is set out in the United Nations Charter and in the International Covenant on Economic, Social and Cultural Rights (Art. 1); and which state that it is the peoples on which the right of free or self-determination falls, and not the populations (IDIES Collection, 9).

In Chile, the program of Intercultural Bilingual Education (EIB, by the Spanish acronym), by its definition and objectives, poses a paradox that is difficult to reconcile: the strained relationship between equity[5] (see Fernandez, 2005), ethnic identity, and cultural reproduction; a paradox that places the issue of indigenous peoples' rights in education at the center, from a perspective of cultural integrity and autonomy in accordance with international standards on the rights of these peoples. In essence, contradictions arise when analyzing the real possibilities for the EIB program to fulfil its stated purpose of being a tool to strengthen indigenous cultures and identities if it is conceived as an instrument for reducing inter-ethnic (indigenous/non-indigenous) gaps in access to the hegemonic education system and academic performance within it. The school is one of the most homogenizing cultural devices and it is functional to the assimilation processes experienced by ethnic minorities in modern Western societies. In other words, is it possible for EIB to contribute to the reproduction and strengthening of indigenous cultures when there are no substantive reformulations of the formal education system to reflect the reformulation of the relationship between the Chilean state and indigenous peoples?

These contradictions are part of the still unresolved "new deal" between the state and the indigenous peoples, which has been established in the public agenda in the post-dictatorship period in an effort to address the "ethnic issue" with ethnocultural discourses and actions, but always within the framework of a neoliberal model of development, which stifles any substantive progress in terms of recognition of the collective rights of these peoples and prevents critical reflection-action regarding the integrating function of citizenship in democratic contexts, as well as its necessary resignification (Alfaro et al., 2008; Galli, 2006; Touraine, 1995). The truth is that Chile will continue on the path of internal colonialism and will not advance towards a plurinational or pluriethnic democracy as long as the state persists in rejecting indigenous peoples as subjects with collective rights, in keeping with the international consensus, continues limiting their territorial rights to land, conceived as immovable property despite explicitly recognizing at the legislative level that they are an essential part of their existence, promotes generic political representation measures such as the special indigenous district recently announced by the executive branch of government (see Aninat & Gonzalez, 2014), or encourages processes of participation and consultation that have been delegitimized by the indigenous movement and questioned by international human rights bodies to resolve issues related to their development.

From the platform described, we question the EIB program in Chile, which is designed to respond to the need for inclusion of indigenous populations in the attempt

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[5] The concept of equity conceived as access on equal terms by indigenous peoples to participation in the hegemonic social, political, economic, and cultural systems within the framework of modern states. As stated by Fernández (2005) in the context of EIB, equality of conditions operates through the implementation of mechanisms that facilitate the equalization of indigenous students with non-indigenous normative stereotypes in behavioral and cognitive terms. From this perspective, the EIB proposal would still reflect the processes of assimilation into national society to which indigenous individuals are subject.

to build an equitable society based on the recognition of rights: What are the possibilities for autonomy and cultural reproduction of indigenous peoples, recognized as ethnic minorities, in the current scenario in Chile? What place do indigenous worldviews, the teaching and learning processes derived from them, and culturally valid fields and sources of knowledge have in official education systems that are not redefined on and by interethnic relations, but instead incorporate "the indigenous" as a secondary subject in the curriculum? Does the EIB program contribute to the generation of structural changes in the power relations that lead to transcending "inclusion" and looking effectively at the recognition of rights? What role does the EIB program play at present and whom does it really favor? Is it possible, based on the current state of EIB in Chile, to consider the construction of an intercultural citizen? What is the contribution that the EIB program makes to the creation of differentiated citizenships? These are some of the questions that guide the reflections presented in this chapter.

The chapter is organized in four sections. The first explores the definition of intercultural education that steers this reflection. The second section discusses the problems faced by intercultural bilingual education in Chile if it is considered to be an instrument for strengthening the culture and identity of indigenous peoples. The third outlines the different stages through which we believe the EIB program in Chile has passed, and, finally, the fourth section proposes some final thoughts based on the information presented.

6.2   Clarifications on the Definition of Intercultural Education and its Decolonizing Purpose

Since the appearance of intercultural education (IE) as a branch of education in the 1940s, a variety of interpretations have proliferated, meaning the term has acquired a certain laxity. It is therefore possible to find texts that use concepts such as multiculturalism, transculturality, and even pedagogy as a synonym of intercultural education[6] (Gundara & Portera, 2008). In this respect, it is essential to specify what this chapter refers to when it discusses intercultural education and what ideas it subscribes to when it uses the term.

IE has been defined as the mechanism through which problems of inequity can be addressed because it is an area of education that is connected to issues of human rights, citizenship building, comparative education, conflict resolution, and multilingual education (Gundara & Portera, 2008). In this sense, EIB provides a space within education that fulfills a dual function. On the one hand, it allows educational systems to be questioned critically regarding crucial issues such as those mentioned by Gundara and Portera (2008) and, on the other hand, based on this questioning, it

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[6] The quote reads: "In several countries, and in many English-language books, no sharp distinction is drawn between the concept of multicultural and intercultural education or pedagogy" (Gundara & Portera, 2008, p. 466).

allows the consideration of systemic and educational strategies that are intended to generate conditions of equity in education, to reformulate education itself. In turn, EIB can be thought of as a field of study, insofar as it provides information on the different trends and stages through which the development of education and social relations in terms of equity, inclusion, and participation has passed.

In this chapter, IE is defined as a type of education in which both pedagogical and human relations—in a formal school context—are a reflection and product of processes of negotiation between social actors (not necessarily antagonistic) who coexist in the same socio-territorial space and participate in different cultural traditions In this context, IE is an educational model that takes into account the exercise of differentiated and pluralistic citizenship and reinforces its existence at the same time. In Latin America, the emergence and development of IE is part of broader processes aimed at generating new social pacts between states and indigenous peoples that, going beyond the liberal notion of citizenship, pave the way for multicultural and pluriethnic democracies[7] (ECLAC, 2007; Pedrero, 2012, 2013).

Intercultural negotiation comes from the critical dialogue carried out by these different groups, in which they address: (a) the historical and circumstantial power relations that have marked and/or mark the interaction of the participating groups; (b) the different views of each group regarding the concept of humanity and human development; and (c) the tangible and intangible conditions are made explicit so that, differentiated models of human development, defined based on the particular worldviews, are realized. In this scenario, IE should take into account a type of intercultural relations in which the participating actors negotiate, under equal conditions, the ideological and material positions from which they participate in the interaction. That is to say, to be the reflection of the exercise of an intercultural philosophy (IF) in which "one learns to philosophize from the context of the dialogue of cultures" (Fornet, 1997, pp. 365–382) for which it is a sine qua non condition, to emphasize the "*factual contextuality*" of intercultural dialogue, clarifying the contextual conditions in which this is carried out, exposing how the dominant world context calls for interaction, but as a mere formality in as much as it does not promote "simultaneously the equitable cultural distribution of the real power of order and configure the contextuality of the world and, in addition, contribute to constructively explain the reordering of such conditions" (Fornet, 1998, pp. 17–18; in Vallescar, 2000). Hence, IE is not defined and limited to the formal school space, but is the manifestation, in that space, of a type of relationship that cuts across all the institutions in which the groups that interact participate.

That said, if one thinks specifically of the school environment, as an educational model IE should reflect the human relations (social and political) that are

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[7] A pluriethnic or plurinational democracy, far from promoting the homogenization of the exercise of citizenship, proposes a citizen equality that is open to 'differentiation' (not to inequality), allowing the incorporation of indigenous peoples or other ethnic groups into the broader political community not only as individuals, but also as collectives. The type of rights associated with demands for differentiated citizenship correspond to special rights of representation for excluded groups, rights of autonomy in key aspects of the life of nationalities, cultures, or peoples encapsulated within plurinational states and cultural rights. See Pedrero, (2013).

constructed at a general level in society and that are expressed in the "rules of the game" (Bourdieu, 1997) that demarcate and regulate intercultural relations in the school social field. These "rules of the game" should demonstrate a style of inter-action in which contents, pedagogical strategies, learning scenarios, actors involved in the process (which are not necessarily the traditional ones in the Western model), didactic elements, views and interpretations of local history and the human being, learning goals, language, etc. are negotiated. For this to happen, interculturality in formal education requires a process of decolonization[8] that questions epistemolog-ical Eurocentrism and recognizes and validates other forms and sources of knowledge that have emerged from the local sphere (Mignolo, 2000, 2008, 2014); decoloniza-tion that is the result of a constant critical analysis of the power relations that give rise to the atavistic social injustice that affects excluded groups and that is a source of interethnic conflicts. If this is not the case, IE will only contribute to internal colonialism, which is concealed within the rhetoric of the equal conditions between those who participate, in practice, in politically exclusive social relationships (Gorski, 2008; Jones, 1999).

Considering the characteristics described, IE is conceived as an instrument that allow us to question the structural relations that give rise to social injustice and violate the human rights of culturally differentiated collective subjects: the distribution of political and economic power, gender relations, and inter-ethnic relations, among others. It is also considered as fostering the development of critical subjects that, through the exercise of citizenship, promote the transformation of such relations so that the different human groups that coexist in the same state can effectively rediscover themselves, reconnect, and relate to each other within the framework of multicultural democracies. The purpose of EIB should be to advance with a type of social justice that does not demand inclusion, but the right to the reproduction and control of one's own culture in a context of autonomy; an interculturality "that is not merely 'being' together, but the acceptance of the diversity of 'being' in terms of its needs, opinions, desires, knowledge, perspective, etc.… [that is to say that] it reveals and brings into play the colonial difference" (Mignolo in Walsh, 2003, p. 8) with the purpose of discovering it and affecting its reproduction. This is an interculturality that, as Gorski (2008) suggests, is only possible to achieve through the deconstruction of the systems of power, privilege, oppression, conscience and lack of conscience. That is, an education that exposes the hegemonic relations of colonization and is capable of becoming a point of resistance to the colonial matrix that has classified, subordinated, and assimilated the "indigenous peoples", and not a point of accommodation for the interests of the dominant elites. But also, and above all, as Walsh (2008) tells us, this should be a critical interculturality that is "deliberate action", one of its tasks of which is to decolonize.

Only in these circumstances is it possible to think of IE as a space for dialogue that recognizes and gives value to cultural, ethnic, and linguistic diversity and which

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[8] For a simple explanation of the term decolonization, see Mignolo in the interview "Pensar Como Sudaca" in: "La Diaria", May, 2014.

promotes the cultural reproduction of the different human groups that coexist socio-territorially and which can also be related to globality, as Aikman (1997) points out; or in a similar sense to the ideas on interculturality of which Cushner (1998) speaks, seeing IE as the possibility of an interaction that comes from understanding difference and the recognition of similarities as essential elements for collaborative work, as an opportunity for both majority and minority groups to learn, one from the other. This is far removed from the neoliberal order and the purpose that, under the guise of "inclusion", subjugates the genuine recognition of otherness to the interests of the market.[9]

6.3 Otherness: Between Assimilation and Folklorization

The ideas that knowledge is never neutral and that the school is the perfect place to reproduce rationalities and practices that organize the social order have long been discussed in academia (McLaren, 1986; Dei & Simmons, 2010; Deng & Lucke, 2008). In modern Eurocentric societies, the educational institution is a special place for the reproduction and transmission of knowledge, the school being the perfect social microcosm where the epistemological relations that organize modern Western societies are put into practice. The hegemonic educational system in Chile is sustained and built in accordance with the ideals that correspond to a neoliberal development model, which is associated with a specific type of person-citizen that is defined based on liberal ideas of citizenship that place the individual and their freedoms at the center, one who is part of a homogeneous collectivity, the nation (Martinez, 2013). Linked to this model of development and citizenship is a set of knowledge and techniques that are functional to the model of human and economic development.[10] According to the ideas related to a single citizenship and a national integrity, in Chile equity is defined as equal access to the economic and human development model that is stipulated by the state. In this sense, in the area of education, equity is defined

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[9] Walsh (2008) has spoken extensively on this topic, identifying a type of interculturality called functional interculturality. This type of interculturality, with its development supported by the UN and the liberal democracies based in the Global North, promotes a type of interculturality that capitalizes on difference, within the limits of the national order, transforming it into fuel for the expansion of neoliberalism and the continuity of the uni-national, hegemonic, and colonial state. This type of interculturality is tolerated and is included. Walsh identifies very well how functional interculturality can be taken as a kind of synonym of multiculturalism.

[10] A clear example of the functionality of the Chilean education system in the expansion of the neoliberal model is the adoption of competency-based education as a guideline in the definition of curricular objectives. Although this approach mainly informs technical and professional education, it has also been incorporated into areas of the curriculum that do not necessarily seek to provide students with technical training. Here, it is not a matter of demonizing education for competencies, but rather of making it clear that, although it is useful for training that seeks to incorporate students into the labor market and into society in general, it is insufficient for training students to become critical citizens and to be politically active in social construction. For details of education by competencies, see http://www.ibe.unesco.org/es/themes/approach-by-competencies.

as equal access to the educational system in such a way that the student, regardless of their ethnic, socioeconomic, national, racial, sexual, or gender status, can achieve and experience success in school. Such success is conventionally understood as the conceptual, attitudinal, and value management set out in the school curriculum, acquiring the competencies and skills necessary for integration into Chilean society in the social, cultural, economic, and civic spheres, etc. The Ministry of Education (MINEDUC) makes this mission explicit when it states that it seeks to "ensure an equitable and quality education system that contributes to the comprehensive and ongoing education of individuals and to the development of the country, by means of the formulation and implementation of sectoral policies, standards, and regulations" (MINEDUC, 2014).

In line with MINEDUC's institutional mission, the EIB program in Chile is aimed at reducing the gaps that exist in terms of access to knowledge and educational success between indigenous and non-indigenous students. This objective has acted as a backdrop in the different stages through which the EIB program has gone, gradually incorporating other elements such as the strengthening of indigenous cultures, languages, and cultural identities and, more recently, the creation of intercultural citizens. The incorporation of these elements has meant opening up spaces for discussion about the program and its vocation for democratization and recognition of the rights of "indigenous peoples" (Fernández, 2005; García, 2012; Montecinos, 2004).

The problem emerges as at least three contradictory and irreconcilable situations arise given the current socio-structural characteristics in Chile: (a) equal access to the homogenization promoted by the formal school system, (b) strengthening the cultural and ethnic identity of indigenous students, and (c) creating intercultural citizens. With respect to the first two situations, conflict arises because it is not possible to strengthen a cultural and ethnic identity based on the homogenization that the formal school system imposes on the individual. Therefore, as long as equity is considered as access to a homogeneous model of humanity, the coexistence of multiple worldviews does not take place, and the tangible and intangible conditions for its reproduction are not created, the possibility of strengthening the culture and cultural identity of models of human development that differ from the dominant paradigm is immediately denied. This means that the EIB program becomes a statement of good intentions, since it is not possible to effectively move towards equity and strengthen the culture and identity of indigenous populations if the ideological basis of the formal education system is not questioned.

In the area of education, considering equity as equal access to the dominant education model not only fails to challenge the exclusionary nature of this model, but reaffirms it. If the elements, processes, objectives, expected results, methods of constructing knowledge, and conditions for its reproduction that occur within the framework of the school are not challenged and redefined, that is, "are negotiated interculturally", what is prevented is specifically the reproduction of the cultures of indigenous peoples. The more "equitable" the system, that is, the more it insists on reducing the gap between indigenous and non-indigenous students, in terms of access to and performance within the dominant educational model, without the material and ideological conditions for the reproduction of indigenous worldviews, the more the

students' right to cultural integrity will be violated and the greater the process of assimilation will be. The interdependence of human rights is widely recognized; hence the right to education of indigenous peoples can only be exercised within the framework of the implementation of all of their social, economic, cultural, and political rights.

When one looks at the EIB program in terms of its aims and objectives, one sees a clear manifestation of the interpretation that the dominant society in Chile makes through the law of both of the role that indigenous peoples have (from a historical nineteenth century perspective) in the constitution of the nation and of the role of the Chilean state towards them. Under the law, the state defines, expresses, and establishes a model of interaction for both parties. It identifies who the participants are (state versus *Mapuche*, *Aymara*, *Rapa Nui*, *Quechua*, *Collas*, *Kaweshkar* or *Alacalufe*, and *Yámana* or *Yagán*) and what the obligations of each of them are. Given the rules of the game and the stated role of the state towards "indigenous peoples", the EIB program is the *control device* through which the state, representing the dominant Chilean society, promotes "cultural reproduction", but in a selective manner and as long as it does not cause conflict, but instead reaffirms the terms established for such interaction; that is, as long as the recognition of rights and/or the strengthening of indigenous identities and cultures do not contradict the nationalist socioeconomic and cultural project of the Chilean state. In this scenario, it is difficult to see what place indigenous worldviews occupy in the school agenda. Under these circumstances, it should be asked what is the effective role of the EIB program in maintaining the status quo in Chile?

The strengthening and reproduction of a culture is only possible as long as the human group that is the bearer of that culture and worldview has the material and spiritual conditions to experience it, rebuild it, and promote its survival autonomously. The identity, and principally the collective identities, like those based on culture or nationality, emerge from the identification of an other who is different from oneself and therefore are intrinsically exclusive in terms of belonging (Bauman, 2005; Guibernau, 2009; Todorov, 2007). They are not constructed on the intentions of the dominant group to strengthen them, since this only leads to the folklorization of culture, which is merely marginalizing and discriminatory. The preponderant role of the school institution is the formation of citizens who are committed and functional to the hegemonic national project. Hence, the recognition in "indigenous populations" of the existence of culturally differentiated subjects suggests not only the existence of cultural and national identities that are alternative to the hegemonic project of the neoliberal Chilean—Western—state, but also different rationalities in terms of access to, and management and distribution of the territorial resources in which such "peoples" develop.

Ahmed draws an interesting conclusion in her paper: "You end up doing the document rather than doing the doing" (2007). After examining the policies and documents produced based on the legislation governing race relations in the United Kingdom, she concluded that the production and use of anti-discrimination documents had the opposite effect and instead acted as devices that conceal acts of institutionalized racial discrimination, as if the mere fact that an organization stated that

having signed up to an anti-discriminatory code of conduct meant that that code of conduct was actually put into practice. Following Ahmed's argument and considering the above, it is very difficult for the EIB program to contribute to the reproduction of indigenous peoples' culture in the context of a state that denies the peoples the very basis of the existence of these cultures. Therefore the EIB program is not the sectoral manifestation of a set of initiatives that transform the subordinate situation in which indigenous peoples currently develop, but one of the many mechanisms through which assimilationist efforts are concealed.

The following section examines the different stages through which EIB in Chile has gone, examines its objectives, describes the actions attached to the different approaches that have been carried out during the last 15 years, and reflects on the reality of the EIB program in relation to the recognition of the right to cultural reproduction.

6.4   A Brief History of the EIB in Chile

A brief glance at the website of the Ministry of Education in Chile gives no indication of the existence of an Intercultural Bilingual Education policy and program (PEIB, by the Spanish acronym). After some searching and checking various news items, under the "contents" tab, classified as a school stage, the statement "Intercultural Bilingual Education Program" appears. One might think that this peripheral position that the PEIB occupies on the official website of the Ministry of Education, as a school stage, perhaps symbolizes the transitory character conceived of interculturality in Chile.

The creation of EIB is part of a set of actions that the state has promoted since the post-dictatorial period, with the aim of vindicating the human rights and individual guarantees that have been violated for decades in the country. In this context, during 1993, the government of Patricio Aylwin enacted Law 19,253, also called the "Indigenous Law", which "establishes norms on the protection, promotion, and development of indigenous peoples". This law was a great legislative advance in terms of cultural pluralism and promotion of economic and social development of indigenous peoples, and yet it has been labeled a "conservative" law in terms of collective and political rights if this legal instrument is compared with international trends on indigenous rights (Aylwin, 2000; Boccara & Seguel, 1999; Pedrero, 2009). Although this law is a step towards overcoming the dynamics of integration-assimilation that have historically characterized the actions of the state—by enabling the implementation of a set of initiatives aimed at improving the living conditions of indigenous peoples, as well as strengthening their culture and identity—it is clearly insufficient in terms of at least the following aspects: (a) the recognition of indigenous peoples as subjects of collective rights, incorporating the expression "indigenous ethnicities", deprived of the political rights implied by the expression "people" contained in the proposal made by the indigenous movement in Congress in 1991; (b) the territorial

basis necessary for development also sustained in that Congress[11]; and (c) mechanisms for the political participation of indigenous communities in decision-making (Pedrero, 2009). The law defines the permanent link of indigenous peoples to the nation-state in Chile, since they are an "essential" part of its foundation and therefore the state is ultimately responsible for their welfare, survival, and reproduction.

Article 28 of the Indigenous Law establishes the responsibility of the state to create the conditions for the protection, promotion, respect, and development of indigenous populations, their cultures, and families; an obligation that in the educational area includes: a) the creation of a programmatic unit incorporated into the national school curriculum that informs students in general about indigenous cultures and languages (Article 28); (b) the creation of an Intercultural Bilingual Education System operating in territories with a high density of indigenous people that prepares indigenous students to function adequately in their society of origin and in the global society (Article 32); and (c) the creation of a system of indigenous scholarships (Article 33).

In this context, several lines of action have been established and the discussion on the effective implementation of EIB plans in territories with higher concentrations of indigenous population has become more relevant. Thus, in 1996, under the government of Eduardo Frei Ruiz-Tagle, the Chilean state officially inaugurated the EIB Program, coinciding with a major educational reform that, at that time, was beginning to take place in the elementary school curriculum.

If we look at the program throughout its existence, it is possible to identify three different stages since its creation; that covering the period from 1996, when the EIB program was formally inaugurated, to 2000, which is referred to here as the exploration stage; a second one between 2001 and 2006, coinciding with the emergence of the first phase of the Origins Program and the reflection carried out in the context of the policy on "New Treatment for Indigenous Peoples", here called the implementation phase; and finally, a third stage from 2006 to the present, here called the consolidation and improvement phase of the EIB program. The latter has been reformulated, as is evident in the declaration by the Ministry of Education of the objectives of the program and EIB, following Chile's ratification of ILO Convention 169 in 2008.

The first stage of the program was characterized by a period of exploration of the possibilities of intervention and theorization on educational lines that, based on cultural relevance, could reduce the gap between indigenous and non-indigenous students in terms of school success. During this period, the Ministry of Education made one of the objectives of the EIB program "to contribute to improving learning achievements, based on strengthening the ethnic identity of children in basic education establishments located in contexts of cultural and linguistic diversity" (MINEDUC, 2005, p. 3). In order to fulfil this purpose, five universities located in regions I, II, VIII, IX, and X, received funding through a public tender for: (a) the design of culturally relevant teaching strategies, (b) the transmission of general information to teachers about these strategies, (c) the design and dissemination of teaching materials considered to be culturally significant, and, finally, (d) advice on

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[11] For a detailed analysis of the inadequacy of the law on indigenous rights, see Pedrero (2009).

the creation of a national curriculum that takes into account the cultural diversity factor present in the national territory (MINEDUC, 2005). During this phase, information was collected that would provide data in order to identify where (in terms of territory), among whom, and with what instruments intercultural education policies would be focused (MINEDUC, 2011b). This period came to an end in 2001 when the objectives of the EIB program were reorganized, giving way to the phase we call "implementation".

The second stage of the EIB program was part of the emergence of the so-called "Origins Program" and the work carried out by the "Historical Truth and New Deal Commission" which evaluated the historical role of the Chilean state regarding indigenous peoples. Thus, under the government of Ricardo Lagos Escobar, one can clearly observe the reformulation of the discourse that accompanied the policies aimed at indigenous peoples, affecting the educational area, which until then had been a kind of "trial phase", a reaffirmation. At this stage, two main lines of action were proposed: (a) training of teachers specialized in interculturalism and bilingualism and (b) creation of curricular proposals (MINEDUC, 2011b). What was new was that access to knowledge was being reconsidered in terms of cultural particularities, for which curricular variations were formulated in accordance with the singularities of each native people (Mondaca & Gajardo, 2013). Although there have been some changes in terms of the objectives of the EIB program, the main thrust of the actions implemented continues to be related to the need to reduce the gap between indigenous and non-indigenous students in terms of educational success, incorporating a new element for the institutional definition of "quality" in education; this new element being the strengthening of "cultural identity". From 2001 there has been evidence of a change in language when it comes to defining the role of intercultural policies in education. Although the need to adapt indigenous cognitive epistemological patterns to the dominant pedagogical-cognitive strategies is still considered one of the pillars, in order to make the approach to hegemonic knowledge "friendlier" or "culturally relevant", the territorial contextualization began to be considered and the statements "strengthening of the original culture" and "cultural contextualization" begin to appear (MINEDUC, 2011b).

The third phase of the EIB program began around 2006. This stage, which is referred to here as the consolidation stage, is connected with the so-called "Phase II of the Origins Program". Given the reflection carried out during the construction of the "New Deal for Indigenous Peoples" policy, the central objective of the intercultural initiatives was redefined, and it was approached as follows: "To promote the development of indigenous rural communities with identity in five regions of the country, strengthening their capacities and generating greater opportunities in their public environment" (MINEDUC, 2011b, p. 11). Thus, the EIB program was also permeated by this new emphasis, focusing on the recognition of the country's cultural and linguistic diversity and on strengthening the ethnic identity of indigenous peoples. The various actions that were and are being carried out include (a) implementation of the curriculum in EIB in the whole of basic education, (b) democratization of the construction of the curriculum and of the Institutional Education

Project (PEI, by the Spanish acronym) through community participation, (c) implementation of the possibilities of curricular autonomy for the inclusion of EIB into the institutional education project and in pedagogical strategies, (d) incorporation of community agents, recognized as "traditional educators", (e) the use of information and communications technology (ICT) as a tool for culturally relevant learning of curricular content, (f) production of school texts, and, finally, as the central pillar of all these efforts to make EIB policy a tangible and significant event in terms of the reproduction of cultures, the creation and implementation of the subject of "Indigenous Language" in educational establishments with a high proportion of indigenous students.

The "Indigenous Language" subject was formalized in Decree 280 of September 22, 2009. This subject was created in response to the demands for the cultural, linguistic, and educational rights of indigenous peoples and was connected to Chile's ratification of ILO Convention 169 on Indigenous and Tribal Peoples in Independent Countries in 2008. Similarly, Article 30 of the Convention on the Rights of the Child (1989), which states that no indigenous child may be denied the right to have their own culture, to profess their own religion, and to their own language, also had an influence on the creation of the subject. Thus, Decree 280 establishes that all schools can include the subject of "Indigenous Language" as part of their organization and curricular programming; however, all schools with over 20% of the total enrollment of students who are identified as indigenous as of 2013 must implement the subject.

Bernstein and Solomon identify language as the fundamental field for the cultural transmission and internalization of social order and structure (Bernstein & Solomon, 1999). Although in the ministerial documents observed there is no official declaration by MINEDUC that supports this point of view, it can be inferred that the centrality that the subject of "Indigenous Language" has acquired within the EIB program would respond to this logic. We can consider that the rationale that operates behind the implementation of the subject proposes language as the main vehicle through which culture is transferred, hence the fact that this subject is also perceived as the epitome of the desired cultural relevance of the curriculum. Thus, the EIB program, which came about as an initiative aimed at generating greater equity in terms of access to quality education and reducing the gap between indigenous and non-indigenous students in terms of learning achievements, establishes this subject as the possibility of realizing the cultural contextualization of the curriculum.

For this reason, since 2009 curricula have been created for teaching the *Aymara*, *Mapudungun*, *Quechua*, and *Rapa Nui* languages. These programs have been accompanied by the design and use of teaching, pedagogical, and technological materials, as well as text and software for learning native languages. All of these actions are framed within what have been defined as the central pillars of the EIB program, which include: (a) improvement of the quality of education through cultural contextualization of the curriculum, (b) increased bilingualism for better cognitive development and strengthening ethnic identity, and, lastly, (c) incentives for community participation in the education of students in institutions participating in the EIB program (MINEDUC, 2011b).

This shift towards the consolidation of a policy aimed at the indigenous populations living in Chile was made possible thanks to the contribution of USD 133 million between 2001 and 2010 from the agreement signed between the government of Chile and the Inter-American Development Bank within the framework of the Origins Program, in order to meet one of the objectives set out in the Indigenous Law, which relates to "respecting, protecting and promoting the development of indigenous peoples, their cultures, families, and communities, by adopting appropriate measures for these purposes …" (Law 19,253). Although these resources were distributed among different lines of action (Organizational Strengthening, Productive Development, Art and Culture, Intercultural Health), education was and is a sector that attracts great attention. The work carried out by the EIB program was in line with a general education reform, which allowed the creation of educational programs with a territorial approach. Between 2001 and 2009, documents issued by MINEDUC and the Ministry of Planning and Cooperation (MIDEPLAN) state that the so-called first phase of the Origins Program defined and financed educational objectives with activities aimed at disseminating EIB; promoted the creation and monitoring of institutional educational projects that were oriented towards EIB; financed curriculum development in EIB and teacher training on the subject; generated learning resources and applied research related to EIB; assessed learning; developed new communication and information technologies; and, finally, studies of young people and adults were financed within the framework of EIB (MINEDUC, 2011a). Between those years, the coverage of the EIB program effectively reached 160 educational establishments that served *Mapuche*, *Aymara*, and *Atacameño* students, 900 teachers were trained in EIB, and the so-called "cultural advisors" were incorporated in an attempt to integrate native knowledge into educational practices (MINEDUC, 2011b). In this regard, it should be noted that the inclusion of community elders and leaders, as well as the cultural and linguistic adaptation of the curriculum and the creation of school texts, responded to this attempt to revive and strengthen both the culture and cultural identity of the various indigenous human groups that coexist in Chile.

Over the years, it is clear that there has been reflection on what the objective of the EIB program is and a reconsideration, at least in terms of the form, of what its purpose is. At present, on the official website of the MINEDUC, the objective of the EIB program is described as

> [contributing] to the development of the language and culture of the native peoples and to the formation of intercultural citizens in the educational system ... the proposed objective is that all students, without ethnic limitations, acquire knowledge of the language and culture of the native peoples through pedagogical practices and intercultural institutional management. (MINEDUC, 2014)

This definition of the program differs in various aspects from those stated at the beginning of EIB in Chile. On the one hand, it does not emphasize cultural relevance as a key pedagogical strategy in achieving learning achievements, but instead attributes a crucial role to language learning and reproduction of indigenous culture in the formation of an intercultural citizenship. Another important element that is important to note is that it does not focus intercultural training only on the

indigenous population, but recognizes the need to extend interculturality among non-indigenous students, which clearly denotes progress in understanding the real dimension of the concept of interculturality.

That said, given this statement, several questions immediately arise: Is it possible, based on the current curricular offering in EIB, to create an intercultural citizen? Is the emphasis on knowledge of the indigenous language through the indigenous language subject a sufficient instrument for knowledge of the culture and reproduction of the worldview? Is learning of the indigenous language, considered as the cornerstone of the EIB program, addressed based on the construction of epistemologically differentiated knowledge? And, lastly, is there a real transformation in the different stages through which the EIB program in Chile has gone that shows an understanding of interculturality that promotes the coexistence of differentiated citizens? Next, by way of conclusion, we present some reflections guided by these questions.

6.5   Conclusions

It is clear that the EIB program has played a major role within the various initiatives that have emerged from the Chilean state with the purpose of achieving recognition of indigenous peoples' rights. However, this effort is not free from contradictions. At first glance, we are given the idea that the state has carried out numerous initiatives to provide welfare to "all members of Chilean society". However, it takes more than mere good intentions to provide welfare to "all".

The EIB program in Chile is seemingly "tokenism", a symbolic declaration of good intentions that, however, does not promote a real transformation in those areas to which the narrative subscribes. Far from acting as a decolonizing instrument that challenges and advocates a reorganization of the existing hegemonic order and guides structural transformation, it actually reaffirms it. The quest for the recognition of indigenous peoples as subjects of law with the right to reproduce their culture, institutions, languages, and to build identities of whatever kind, but differentiated from the hegemonic one, is merely an illusion if this is expected to happen through the implementation of the EIB program or the set of public policies inspired by the same subject matter, and there is no discussion of the underlying issues involving the recognition of self-determination, self-government, direct participation in decision-making and the restitution of territorial resources. García (2012) suggests that in Latin America in general and Chile in particular, intercultural policies and discourses are subordinated to the hegemonic neoliberal policy and its economic objectives, acting more as instruments that assist in the legitimization of spurious democratic regimes, than as a device for the recognition of rights.

The peripheral position of the EIB program on the official website of the MINEDUC indicates its marginal effectiveness in the promotion of rights related to cultural reproduction. If we ask ourselves what the possibilities are for the reproduction of different worldviews within the formal school system, we find ourselves

in a somewhat disheartening situation at present. The first point that deserves discussion is the continuous efforts to incorporate aspects of indigenous knowledge into the formal Western pedagogical format. It is not possible to reproduce the culture of a society from an epistemology that is different from one's own, if not through reductionism and folklorization of that culture. Thus, every time we witness a new attempt at "curricular contextualization" we are witnesses to the dissection to which indigenous cultures are subjected. The dominant society selects, hierarchizes, reformulates, and transfers those aspects of the culture that are functional to the educational purpose of the hegemonic curriculum. However, it is specifically the promotion of the reproduction of indigenous worldviews that is not achieved, since the ideological conditions, and much less the material conditions, do not exist for this to take place. Thus, every bid to provide cultural relevance to curricular content in order to reduce gaps in terms of learning achievement becomes a failed attempt if such efforts are not the reflection of intercultural negotiations that occur in the totality of social relations. Therefore, the intercultural project in Chile has not managed to go beyond the described functional interculturality. So, what are the real possibilities for strengthening culture and cultural identity in the current Chilean social context and specifically in the area of education?

One possible answer is provided by the study to assess the implementation of the Indigenous Language Sector carried out by the Center for Comparative Education Policy (CPCE) of Universidad Diego Portales (2012), which states that there is a tension between multicultural and intercultural approaches when they are implemented. This situation is manifested through the actions that are carried out within the framework of this program, these being related to the celebration of traditions and indigenous folklore which acquire preponderance instead of actions that promote the formation of intercultural citizens capable of moving between cultures in a fluid manner (Treviño et al., 2012). If we were to examine each of the points described in the previous sections regarding the different phases of EIB in Chile, we would see how each of them eventually acts as another starting point for the distancing of culture and approaching the assimilation of indigenous peoples into the discourse of Chilean national identity, thus providing an answer to the question asked; education still does not offer great possibilities in the current political context for the reproduction of the different indigenous worldviews cited within the EIB program, but instead strengthens that of the dominant society.

Likewise, the incorporation of the "Indigenous Language" subject as the epitome of recognition of the "culturally" different other is another initiative that contributes to consolidating the marginality of indigenous languages and that which their speakers consequently experience within Chilean society. Language is a key aspect for the transmission & internalization of a social order and structure (Bernstein & Solomon, 1999), so how can we learn, use, and appreciate the richness of an indigenous language if the only place for the expression of that language in a non-indigenous context is the classroom? Different cultures coexist in Chile, so, if what we seek from the state is to strengthen indigenous culture and identity, the use of indigenous language should be a key aspect present in all the spaces where social interaction is generated. However, teaching of indigenous language is limited to the school and,

furthermore, to schools where the percentage of students who identify as indigenous exceeds 20% of the total.

The use of indigenous language is currently limited to the community context, where it is not necessarily used on a daily basis. We should not ignore the consequences of the assimilationist policies deployed by the state over the last 200 years. In Chile, as in Latin America in general, indigenous languages are in a situation of diglossia. In this regard, according to statistical studies, the percentage of indigenous people who understand and speak their language has declined in recent years, with older adults dominating the use of native language. This situation is dramatically different when consulting the younger generations.[12] The most prominent explanation is the historical subordination to the language of the dominant society experienced by indigenous languages. So, is the existence of an "Indigenous Language" subject really an instrument for the strengthening of the identity and culture of indigenous peoples? The answer is far from affirmative, as the aforementioned studies show the scant impact that the implementation of the sector has had in the promotion and reproduction of indigenous languages.[13] In addition to the above, there are other technical reasons that can be mentioned that substantiate this.

In Chile, the existence of nine "indigenous populations" has been legally recognized; however, the EIB program only addresses four of them: *Aymara, Quechua, Mapuche*, and *Rapa Nui*. Therefore, if the vehicle for the reproduction of culture is language, the rest of the indigenous populations that do not fit into this methodological proposal of *identity revival* are far from being *assisted* by the state in their work to revive their culture. On the other hand, it is not possible to learn a language if it is not related to its use. We have seen how the state, through its various agencies, has allocated an enormous amount of resources and promoted the learning of English with the aim of turning Chile into a competitive country in the global economy. However, the teaching of indigenous languages still occupies a marginal position in the school curriculum that does not even cover the entirety of formal education. As Isla Monsalve has rightly pointed out, culture and identity are "*not a passive participle, but a gerund*" (2012, p. 3).

Within the framework of the EIB in Chile, texts, didactic tools, pedagogical strategies, teacher training, etc. have been developed, all with the purpose of providing cultural relevance to curricular content. However, what needs to be examined in more depth is specifically the *curricular content*. A clear example of this is that we continue to teach a nineteenth century history of the formation of the Chilean state based on

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[12] According to the CASEN (2009) survey, the percentage of indigenous people who speak and understand the native language decreased between 2006 and 2009. The percentage of indigenous people who speak and understand a native language fell from 14 to 12%, while the percentage of those who claim to only understand the language declined from 14 to 10%, and the percentage of those who claim not to speak or understand the language increased from 71 to 77% (MIDEPLAN, 2009).

[13] See Estudio Implementación Lengua Indígena (Study on the Implementation of Indigenous Language), CPCE (2012); report on the consultation process "Bases Curriculares, Sector Lengua Indígena" (Curricular Bases, Indigenous Language Sector), Araucanía and Arica y Parinacota regions (MINEDUC, 2012).

important dates that recall battles without even alluding to the consequences that these acts had on the indigenous peoples. In this "invented tradition" (Hobsbawm, 1983), hegemonic ideas continue to be narrated that display indigenous peoples in a simplified way and as part of the construction of the Chilean nation-state project, whereas nothing could be further from the truth. It is the state that appears to provide institutionality and legitimacy to the existence of indigenous peoples. The indigenous people do not speak, but are spoken about by the state (Isla, 2012).

Seen from this perspective, attempts at intercultural education are merely a reflection of the nationalist matrix of school curricula, with that matrix operating both as curricular content and as an institutional pedagogical objective. Indigenous peoples are therefore one more component of the resources of the historical and patrimonial landscape of the state; they are the *Chilean Indians*. In order to expand on this nationalist aim, assimilation is a normal and successful process as a result of the action of the *inclusive state*. If we look, for example, at the actions carried out by the state through its various agencies, we see a group of specialists (sociologists, anthropologists, geographers, linguists, social workers, educationalists, etc.) who have intervened in advising public policymakers on matters of inclusion, probably with good intentions, a great deal of ideology, and possibly quite a lot of heartache, as described in the scenario in the introductory paragraph to this reflection. However, in spite of the goodwill, at best it has only been possible to correct and clarify the aim of assimilationist public policy instead of redirecting it towards a non-nationalist and non-essentialist approach capable of understanding the indigenous other. Under these circumstances, thinking about the reproduction of epistemologies that are alternative to the hegemonic situation in the school and social context in general is a fantasy, even more so if we consider the formation of intercultural citizens whose training necessarily involves revising the liberal nationalist matrix of the state.

We can also observe the problematic situation caused by the incorporation of *traditional educators*. Far from contributing to the expansion of dialogue and strengthening culture, the inclusion of leaders and elders into classrooms is another tool for community dismemberment that emerges from the alienation to which the communities and their members are subjected. First, the choice of those who are the ideal candidates to fill the role of traditional educators is made by Chilean institutions according to the parameters of formal education and, in addition, those selected are trained to participate in the school institution in accordance with the rules of formal education. In fact, the comments that emerge from the assessment of the implementation of the Indigenous Language Sector is the discomfort of the communities when choosing traditional educators, who are sometimes recruited via public procurement processes (Treviño et al., 2012). As a consequence, we are not seeing a real approach to indigenous knowledge; instead we would say that this is another example of the continuous folklorization of the cultures of native peoples, which also has another even more perverse effect. What happens in a community when the dominant institutional structure chooses its representatives without considering the participatory community mechanisms that provide legitimacy to their representatives? We can imagine that disarticulation, distrust, discomfort, and political disaffiliation are some of the immediate consequences.

Returning to the initial questions, what possibilities does the EIB program in Chile offer for the recognition of the rights of indigenous peoples? Strengthening the culture and identity of a people requires the recognition of the coexistence of different forms of existence, that is, the presence of different worldviews and epistemologies, which do not occur in the immaterial, but in direct connection with access to material resources; in this case, the territory. In the current Chilean scenario, recognizing the existence of different human groups that do not necessarily agree with the project of the nation and the Chilean state implies challenging the legitimacy of Chile as a unitary nation under which each person, human group, and society that occupies Chilean geographical territory can be governed. Thus, faced with the question that challenges the rationale underlying the EIB program in Chile, there are good reasons to consider that it only plays an accommodating role and masks the attempts at assimilation that are necessary for the continued reproduction of the power relations that marginalize some and reward others and that affect Chilean society as a whole.

The real strengthening of indigenous peoples' cultures effectively involves openness to the construction of an intercultural dialogue expressed in a real new deal that promotes dialogue on equal terms between the dominant society and indigenous peoples. However, nationalism undermines the respect for human rights that current education policy claims to promote, since it reduces the validity of those rights while simultaneously prioritizing the widely shared and defended historical-political invention that describes the existence of a uniform nation that claims to be defended. This is expressed in different formulations that still plague public policy instruments: "Chilean identity", the "essential values of the nation" (of "nationality" or of "national identity"), the "cultural heritage of the nation", the "essential characteristics of nationality", or "the feeling of the national community". Hence, the proposal for the construction of "intercultural citizens" is nothing more than a discursive resource. In order for Chile to truly become a multicultural democracy, where differentiated citizens live together and different worldviews coexist, not only in the school environment, but in society in general, it is essential to question the current colonial/neoliberal matrix that organizes Chilean society. Without the will to overcome the instrumentalization of otherness that is carried out under neoliberal policy, an interculturality is created that merely promotes the internal colonialism that is so well described by Silvia Rivera Cusicanqui (1993) and which perpetuates the current and historical power relations that position indigenous peoples in a situation of ongoing marginality.

Given the path that Chile has taken in legal and social terms, what is needed from now on is certainly not being included in, tolerated, and made relevant in the curriculum. What is needed is to recognize the differences and differentiations and to confront the racism, colonization, and exclusion that mark the history of Chile as a nation-state. New actors have now joined this task: the Afro-Latin American peoples historically present in Chile and those who, as a result of their historical marginalization, have moved and settled in the country in recent decades. These peoples must also be thought of as relevant actors in the process of decolonization/multinationalization of the state and as active agents in intercultural relations. Only if all the actors involved are considered can a society be constructed in which

people live under equal conditions. Interculturality is a tool and an end. It is a tool that is a critical practice that leads us to reconnect and recognize our difference. This difference is manifested in the economic, epistemic, ontological spheres, in another history and in another relationship with nature (Walsh, 2008, 2012). In summary, interculturality is an objective to reach. An objective in which we live immersed in a type of relationship that allows us to coexist and cohabit in understanding and solidarity, a plurinational objective that emerges and is renewed in interculturality. That is what the work must be done to achieve.

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Part II
Development of Indigenous Peoples: History and Particularities

Chapter 7
Intercultural Bilingual Education Among the Aymara People of Northern Chile: Approaches and Historical Dynamics in Its Implementation (1994–2014)

Carlos Mondaca, Yeliza Gajardo, and Wilson Muñoz

7.1 Introduction

Chile's northern border is a melting pot of identities that have historically expressed themselves in constantly changing cultural customs and traditions, shaping themselves into a particular and complex sociocultural fabric. In this multicultural context, one of the distinctive aspects of the regions of Arica y Parinacota and Tarapacá has been the historical presence of the *Aymara* population in its rural and urban areas, which has had a significant impact on shaping the sociocultural space of this part of the country. In addition to this, their territories are frontier areas, making these a privileged setting for cross-border economic and political exchange, and for sociocultural exchange in particular.

Since the mid-1990s, various Intercultural Bilingual Education (EIB) programs have been implemented in this setting. Although they have been promoted by the state (Ministry of Education, MINEDUC & National Indigenous Development Corporation, CONADI), these programs were also created based on initiatives from grassroots organizations financed by international agencies that sought to revive indigenous traditions and languages. This financing was mainly focused on the population of Andean origin and it reached a peak through the indispensable work of

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Andean pastoralists and non-governmental organizations (NGOs) in rural areas with a developmentalist perspective of rural peasantry in northern Chile.

Its historical dynamic also reflects the impetus provided by the Special Commission on Indigenous Peoples (CEPI, 1990–1993), which, following the process to return to democracy, highlighted the importance of adding to the public policy the existence of culturally and linguistically relevant education in areas with the presence of indigenous peoples.

However, after two decades of implementation, the institutional and academic assessments of EIB in the region have not been auspicious and point to a significant number of shortcomings. One of the main questions is that the EIB program has only been directed and implemented in rural indigenous contexts, establishing a model of interculturality that is limited and insufficient in territorial terms to achieve broader social inclusion (Cañulef, 1996; Fernández, 2003; García, 2012; Le-Bert, 2004; MINEDUC, 2011; Mondaca, 2003; Raviola, 2011; Riedemann, 2008; Rother, 2005; Sánchez, 2001; Sir, 2009).

This chapter describes and analyzes the processes of incorporation of EIB in *Aymara* areas in the regions of Arica y Parinacota and Tarapacá. In order to do this, we compile studies and academic publications that have examined the scope of bilingual intercultural programs at national and regional level. Based on this analysis, we outline some critical considerations and make a series of suggestions regarding the EIB program that would allow substantial improvements to its implementation in the region.

7.2   Education in *Aymara* Areas of Northern Chile. Historical Review

The institution of the school has not been a phenomenon alien to the *Aymara* populations of the extreme north of Chile. Established in the colonial period, the school was reaccommodated to the government of the national states (first Peru and later Chile), contributing to the policies of assimilation of the population during their respective mandates, while being subjected to the diplomatic status quo of this territory, which has been disputed for almost five decades. During this period, citizen affiliations and civic rites promoted at school were a centerpoint of the quest to build national loyalty.

In this period, the school was a public institution marked by the absence of the state in rural areas and its limited presence in the cities. Various authors have conjectured that, although the school promoted the exaltation of patriotic civility and Chilean identity, its establishment was the result of the efforts of the communities and local agents themselves, who not only built schools, but also contributed to the payment of teachers and invested in infrastructure (Díaz & Ruz, 2009; González, 2002; Mondaca, 2008).

Once the Treaty of Ancón was signed in 1929, the presence of the Chilean state in these territories was intensified through the proliferation of teacher training schools and the deployment of teachers in the localities. It was the latter who would become the main agents for inculcating Chilean identity and modernity in rural, indigenous, and urban areas (González, 2002).

A process of cultural homogenization then began that would only be interrupted in 1961 with the implementation of the Comprehensive Education Plan, drawn up jointly by the Ministry of Education and the Arica Development Board, the public body responsible for promoting the development of the border region. This plan was aimed at promoting national integration in the province's urban, rural, and indigenous areas from a developmentalist perspective. It encouraged the establishment and organization of education in areas of the region with indigenous populations. At that time, it was considered a pilot plan that would be carried out nationally in the future (Belsú et al., 2001; Mondaca & Gajardo, 2013).

The so-called "Andean Plan" was interrupted by the military coup in 1973. From then on, the authorities began promoting "border concentration schools". These were basic education establishments that operated as multigrade institutions, allowing students to live there as boarders. The schools provided technical training in accordance with the activities in each area and were located far from the cities, preferably between the foothills of the Andes and the highlands.

Studies on education and schools in rural areas carried out in this period conceive Andean and ethnic from a primarily developmentalist perspective. The regional headquarters of Universidad de Chile and Universidad Técnica del Estado of that time, and the later Universidad de Tarapacá, began carrying out studies and research on the school circumstances of rural indigenous communities, analyzing problems such as family migration, the situation of rural students and their aspirations for work in the city of Arica, or social maladjustment and school performance. Other studies investigated the educational needs in the Andean foothills and the regional highlands. In addition, the first studies on education in *Aymara* areas from a more critical perspective began to emerge.

In the 1970s, and particularly in the 1980s, a process began to incorporate the educational theme into indigenous areas. Various studies, in different fields of research, investigating the relationship between schools and the local population with Andean characteristics, appeared as precursors of what, at the end of the 1980s, would be called EIB. During this period, a project developed by the Organization of American States (OAS) and coordinated by Universidad of Tarapacá launched the topic of interculturality in the *Aymara* region.

Thanks to this project, a series of texts were produced that were intended to contextualize national education in the region, attempting to develop a specific approach to rural education, although considering the bilingual intercultural dimension only to a lesser extent and from a purely folkloric perspective (Mondaca & Gajardo, 2013).

One of the key points in this stage was the design of school texts for rural teachers, students, and Andean family groups. These were significant, because, early on, they showed the existence of cultural differences between the Andean rural and urban sectors in a context where there was no government program to address them.

However, these texts coexisted with the rigidity of the national curriculum, which resulted in many of these initiatives receiving a very low response from teachers, and not being continued once the project ended or instead incorporated into nationalist plans and programs promoted by the dictatorship, often only disguising the contents with a rural Andean aesthetic.

During this period the problems of rural–urban migration were absent from the discussion and the pedagogical texts. Moreover, it is important to note that most of these studies were focused on children, parents, and teachers in the foothills and highlands of the Chilean Andes, associating and identifying the *Aymara* solely with the Andean environment and ignoring the presence of migrants in the city.

In spite of this, it should be noted that these academic efforts were visionary in terms of understanding the education of the Andean, rural, and even the *Aymara* from a particular perspective. These studies specifically investigated these topics in the interior of the Arica y Parinacota and Tarapacá regions for the first time and from an educational perspective. Although many of these studies fell back upon a essentialism that contrasted tradition and modernity, associating the rural world with backwardness and the urban world with development, they were an important starting point and learning process for the 1990s.

7.3   State Policy and Institutional Action on EIB in Border Areas

The 1990s and 2000s were a period marked by the return of democracy. In education, the 900 Schools (P900) and MECE Básica (Program to Improve the Quality and Equity of Basic Education) programs appeared, both issued by MINEDUC, which promoted social inclusion policies in rural and indigenous areas. These initiatives led to the creation of the first state EIB programs, which were the result of the new indigenous policy that emerged at the beginning of the 1990s in the discussions of CEPI, the body that created Law No 19, 253 and the creation of CONADI (1993). Once CONADI was created, the focus on education was further consolidated with the establishment of the Education and Culture Unit (1995) and the EIB program in MINEDUC (1996).

With the enactment of Law No 19, 253, the Chilean state recognized the multi-ethnicity of its citizens for the first time, expressing its duty to recognize, protect, promote, and value the culture of the native peoples. Various articles of the law declare the state's commitment to the use and preservation of indigenous languages and cultures (Article 7, Article 28). CONADI was the entity responsible for implementing these premises in areas with a high density of indigenous people, particularly through the implementation of the EIB system, with special resources from MINEDUC. The law also indicated the need for prior consultation with the indigenous organizations recognized under the legislation. Since then, and after almost 20 years of EIB in Chile (1995–2014), a series of initiatives were developed whose

realization required a strategic partnership between CONADI and MINEDUC. This partnership began in August 1994 with a report by CONADI's Culture and Education Unit. This report confirmed the need to strengthen EIB through the organization of meetings and participatory planning workshops that would include university organizations, NGOs, Regional Ministerial Secretariats (SEREMIs) and Provincial Education Departments, the National Kindergartens Board (JUNJI), and administrators of municipal education, among others. This initiative was consolidated in June 1995 with the delivery of a report coordinated by Alejandro Supanta (CONADI) and Guillermo Williamson (MINEDUC).

The work compiled the regional results of the EIB workshops held by CEPI and the Regional Commissions on Indigenous Education (CRECI), where the issues to be addressed in public policy on matters concerning indigenous peoples were discussed locally. In particular, the theoretical basis of an EIB policy and program was considered, and a strategy was proposed for national implementation, with some budgetary recommendations also being made. Among many other observations, the importance of this type of education for the enrichment of the country's culture and the development of democratic behavior was also highlighted. This document is the precedent for the implementation of the EIB program in Chile. Many of the theoretical and methodological proposals put forward in that report would be relevant in the regions, and many of them are still valid in discussions on education in indigenous contexts.

Specifically, MINEDUC and CONADI conceived EIB as an educational practice linked to the relevance of learning, the contextualization of teaching content, and the central importance of the child as the focus that should guide pedagogical practice, including the participation of the family and communities. This model would make it possible to exercise the right to learn one's native language and, through that, connect with the fundamental aspects of one's culture of origin, while learning the national language, which would make it possible to become aware of and easily address the cultural codes of national and global society. The purpose of the EIB would be to improve the learning standards of indigenous children through relevant pedagogical strategies. The EIB appeared as a "political-pedagogical" concept and practice that resignifies a school with its own identity, rooted in the bases of interculturality and bilingualism.

A new type of school was proposed, committed to fortifying the identity and self-esteem of indigenous children through the incorporation of didactic content relevant to their cultural and linguistic reality, and the improvement of the pedagogical practices of teachers who teach in areas with indigenous populations.

At the local and regional levels, in 1995, under the auspices of the project "Foundations and Curricular Bases of Intercultural Bilingual Education from the Indigenous Perspective", promoted by the Culture and Education Unit of CONADI, a draft document was prepared for the north of the country entitled "Foundations and Curricular Bases of Intercultural Bilingual Education from the Aymara-Atacameña Perspective", coordinated by Victoria Ilaja Reyes and with a technical commission formed by Horacio Larraín Barros, Juan Álvarez Ticuna, and Juan Quispe Cruz.

One of the main activities developed during this process by the program for the application of the intercultural bilingual curricular and pedagogical design and other CONADI programs between 1995 and 2000 was the implementation of various projects relating to the design of the social and political foundations of EIB. There were also several reports on the national legal framework, the objectives of an EIB policy, the priority lines and stages of development of EIB, and cultural dissemination. A diagnosis was even made of the education situation in this context and period. All of this laid the foundations for an EIB in Chile based on indigenous philosophical and educational perspectives for the first time.

With the creation of the EIB program in 1995, regional investment by MINEDUC in this area was doubled. Within this framework, a pilot program was launched in 1996 with the aim of building curricular proposals that would address the cultural and linguistic diversity of indigenous children attending rural schools in the five regions of the country with the largest indigenous populations (I, II, VIII, IX, and X).

The previous implementation of the Program for the Improvement of Quality and Equity in Education (MECE) (1992), and the MECE Rural Program and the P900 in particular, were important references in this new process. These made it possible for educational establishments to develop pedagogical responses that were more in line with the particularities of areas with people of indigenous, rural, and farming origins. In fact, one of the main contributions of these programs, which enabled the consolidation of the Intercultural Bilingual Education Program (PEIB), were the microcenters of the MECE Rural Program, which allowed teachers to reflect on and devise innovations for their schools by drawing up project profiles to attract more resources.

This pilot program sought to establish an educational modality for the recognition, respect, and protection of indigenous cultures, which would adopt measures relating to the preservation and development of indigenous cultures and languages through the design of program units that would apply a bilingual intercultural curriculum and pedagogical design. The application of this design resulted in lines of action that were developed primarily in the areas of awareness campaigns, the intercultural curriculum, technical teaching materials, community participation, teacher training, and preservation and development of indigenous languages.

In general terms, the main guidelines of the program were planned every four years and were interlinked. These products of each of these were related to education, because culture and heritage were considered an intrinsic part of education, while and specialization and residency were an inherent part of the educational process. In this respect, the degrees of implementation of these guidelines and of many of the products varied from one region to another, according to the characteristics and complexities of the design of each of them.

Along with the start of the educational reform in 1996 and the aspirations that have emerged since the enactment of Law Nº 19,253, specifically in terms of the new curricular framework for basic education, the duty of the school to begin teaching in native language was incorporated as pedagogical guidance (Decree 40/1996). This resulted in the need to strengthen the teaching profession, especially teaching careers in EIB, and also through teacher internships.

In addition, the Rural MECE Program referred to the need to address EIB in small high schools located in *Aymara* areas and to support the indigenous scholarship program, among other actions.

7.4 Implementation of EIB Through Institutions and Indigenous Communities

The year 2000 marked the beginning of a period characterized by the implementation of the Origins Program. This meant there was an increase in public investment, the start of initiatives of a pedagogical nature, and the establishment of several lines of EIB, which increased the number of studies and the academic and pedagogical production on interculturality and bilingualism. In addition, the first textbooks and educational materials on EIB were produced for indigenous school classrooms.

The implementation of the lines of EIB had particular design characteristics and complexities associated with the diverse contexts of each region. In the late 1990s, when the state promotion of EIB began, it was seen locally as being opposed to the modernity offered by the state in rural areas and, for example, many community members found it more important to learn English than the *Aymara* language (Municipalidad de Huara, 2001; Ayni Consultores, 2000). However, it seems to us that within a few years, and as a result of the state's investment not only in education (EIB, indigenous scholarships), but also in productive development programs and regularization of land and water rights, these same community members seemed to have redefined their indigenous past. Powerful discourses have emerged regarding ethnic identities, which have become massified among the communities, probably due to the growing public investment in the EIB area. It appears that this made it possible for EIB to permeate rural areas as part of the local ethnic discourse.

The Origins Program (2001–2011) was incorporated into the work on EIB (both CONADI and PEIB-MINEDUC) from 2001, leading to a turning point. One of the main actions of the Origins Program was to approach EIB from the perspective of the sustainability provided by the new human resources and the increased funding it made possible. These would boost the positioning of EIB in national and regional ministerial dynamics, both quantitatively and qualitatively, as well as among civil society, institutions, and supporters.

A central aspect of this program, and one that is a significant conceptual and methodological contribution, is the importance attributed to the participation of communities and leaders in its various activities. This influenced the educational contexts and processes, possibly leading to better learning results: for example, in this period the "Kusayapu" Agricultural High School has achieved high results in the National Education Quality Measurement System (Simce, by the Spanish acronym) in the Tarapacá Region despite its rural location, which suggests better educational quality in accordance with the implementation of EIB.

If we review the MINEDUC report (2011), it can be argued that the educational experiences of the schools included in the Origins Program should have considered the Community Development Plans (PCD, by the Spanish acronym) designed by the communities themselves, which expressed their demands, proposals, and contributions in the field of education. From this emerges the notion of the local territory of schools: the school-PCD relationship. Furthermore, through the Origins Program, the continuous action of the PEIB was complemented with other lines of action that were innovative or had not previously been contemplated, such as new information and communication technologies, assessment, or the education of young people and adults.

Among the main lines of action of the Origins Program we can highlight efforts to increase public awareness of EIB through dissemination and training activities in the communities, and the realization of community days of reflection among children and young people regarding the EIB educational proposal. We can also point to the development of Institutional Educational Projects (PEI, by the Spanish acronym) by schools in the communities that were the focus of the Origins Program, whereby EIB was integrated based on the participation of the educational community and the indigenous community, in addition to support activities for the reformulation of the PEIs among PEIB schools by establishments targeted by Origins. All of these initiatives have fostered the professional development of teaching and the improvement of teachers and educators in general.

The lines of action mentioned above included impacts of a regional and national scope. These were implemented through tenders or directly by the SEREMIs and Provincial Education Departments. Due to the complexities of the design and the institutional coordination required for execution, this meant that the degrees of implementation of the lines of action varied between the various regions targeted.

Since the launch of the New Deal with Indigenous Peoples Policy (2004–2010), which took place during the presidency of Ricardo Lagos, the indigenous issue has been become state policy. This implied an assessment of the indigenous policies implemented until then, which was prompted by the results of the work carried out by the Historical Truth and New Deal Commission (or Aylwin Commission). These generally proposed the development of policies that could meet the demands of the native peoples.

As far as EIB is concerned, the proposals were taken up again by the first government of Michelle Bachelet and implemented through MINEDUC, CONADI, and the Origins Program (in a first stage, since it merged with CONADI in the second stage). An important change in public policies aimed at indigenous peoples can then be observed (Mondaca, 2003), since the requirements of the Indigenous Law led to the development of territorial and regional proposals regarding the preservation of the education, culture, and cultural identity of each native people.

Starting in 2004, MINEDUC began to invest heavily in the curriculum, public awareness, development, and monitoring of the PEIs, as well as in training and professional development of teachers in EIB in Arica and Iquique, developing learning resources and educational games. There was also spending on infrastructure and provision of resources such as sports and musical equipment, and work tools for

schools; development of applied research in pedagogical practices; and studies of attitudes towards indigenous languages and the sociolinguistic context. It also encouraged the development of local initiatives and a curriculum in which different subsectors included cultural content, as well as reinforcement of the indigenous scholarship program, among other actions.

This entire investment proposal was limited by a reduction in the amount of funding initially committed, which led to a noticeable delay in its implementation. This resulted in low effective implementation in schools and communities. The first studies carried out in this period (Mondaca, 2003; Fernandez, 2003) placed value on the recognition of indigenous peoples as a structural part of Chilean society and as important agents in the education of their children, but pointed out that the effective process to strengthen culture and language ran into a series of political and administrative difficulties, due to the excessive bureaucracy of state institutions (MINEDUC, 2011).

All the development of educational resources in the EIB area over the last decade confirms the need to strengthen the regional educational structure, and particularly the schools targeted in the EIB program, using informal education as a link. In this context, alternatives for education and curricula from the Andean perspective have been proposed for various different levels of education, where the *Aymara* people are seen as part of complex sociocultural processes with great dynamics of social and cultural change.

These studies and products associated with the EIB inform of the beginning of concerns about establishing relevant educational and curricular designs in sectors of the Andean population. The appearance of the first *Aymara* graphemic systems and bilingual texts are evidence of the approach to language and proposals for addressing bilingualism in the region.

Educational materials are also beginning to appear, such as collections of oral stories used in the early grades to bring students closer to their context in the area of Andean geography, which show how this dimension is part of an *Aymara* worldview. For the first time, the subject of ethnomathematics is addressed and a series of studies analyze how the *Aymara* have constructed their worldview at different times in history. In addition to this, studies on migration to the city have emerged and discussions about EIB in urban contexts will begin (Mondaca & Gajardo, 2013).

On a more historical note, in association with the education of the *Aymara* people in the saltpeter-rich foothills of Tarapacá, and to a lesser extent the educational situation in the Andes close to Arica, there is debate on *Chilenization* (transculturation or acculturation leading to the dominance of Chilean traditions and culture) and its influence on the Andean population. Study manuals and some didactic units have been created in this regard. Thus, EIB is generating growing bibliographic materials at the regional level and will continue to develop the aspects that were addressed in the 1990s, particularly through study texts (Mondaca & Gajardo, 2013).

7.5   EIB and the Language of the Chilean *Aymara*: An Educational Model in Difficulty

We believe that EIB should tend to generate transformative education through a curriculum that is comprehensive and formative rather than informative and instructive. At the same time, it should consider the organization, articulation, production, and recreation of its own knowledge and its relationship with other knowledge, prioritizing quality over quantity. We also think that appropriate criteria should be used for the selection and organization of knowledge, closely related to a specific social, cultural, and linguistic context. Finally, EIB should be characterized by flexibility based on action, supported by social and linguistic disciplines that help enrich the didactic process and pedagogical dynamics.

In the light of these considerations, progress in bilingualism has not been free from problems. After almost two decades, only educational materials focused on the revival of the language and the implementation of *Aymara* courses have been created, and handbooks and manuals have been produced that were not implemented as an official policy of the educational system in classrooms. However, the initiative to integrate traditional educators into the schools targeted by both the EIB program of MINEDUC and CONADI and the Origins Program is worthy of mention.

Indeed, despite the initial rejection on the part of the educational administration, some of them were the first to draw up guidelines for the implementation of the *Aymara* language subsector in schools. This subsector began to be implemented in 2011 following the criteria established in the General Education Law (LGE, by the Spanish acronym) that indicate the need to begin this program in the early grades of elementary schools where 50% of more students are of indigenous descent. Each public division, in this case the Educational Department and Administration of Arica y Parinacota (DAEM) and the Iquique Municipal Corporation of Social Education (CORMUDESI), under the supervision of their respective Education SEREMIs, must develop the subject of *Aymara* Language. For their part, every school, coordinating closely with the community, must have a Language Council to advise it on its work and implementation strategies.

In order to monitor the progress of this program, the various public departments have a community supervisor who provides instruction and supervises the level of the classes and the fulfillment of the objectives. The supervisor also supports the work of the traditional educators, since he or she has good command of the spoken and written *Aymara* language, thus becoming a real support and guide.

In Arica y Parinacota, the current coordinator of the subsector is a woman who speaks *Aymara*, is a teacher of Basic Education, and has a Master's degree in Intercultural Bilingual Education, graduating from the only program of its kind in northern Chile, which was also implemented only once. One of the main problems in continuing to develop this type of study program has involved having adequate human capital, since teachers who have graduated from the regional universities have been

deployed mainly in urban areas, teaching according to the provisions of each educational establishment and not as part of a program in EIB, except for those who are in the schools where the subsector is actually implemented.

Under Chilean legislation (LGE, Article 46 g), only those who have a professional teaching degree at the respective level—and a specialty if applicable—or who are authorized to teach in line with current standards, may teach in classrooms. For this reason, in the case of EIB, it has been stipulated that, in the absence of teachers with basic knowledge of the *Aymara* language, traditional educators can give classes as long as they are supervised by teachers who support them in technical-pedagogical aspects (planning, work guides) and in the level of strategies and didactics (group control, dynamics, time management in the classroom, among others). In this context, at the end of the academic year (during the months of November or December) a traditional educator is chosen by their peers as technical support and becomes a trainer of trainers, having to assess the work of their peers in the area of language proficiency and use.

In order to teach traditional educators, a training program is given every four or five years by local universities, usually on Saturdays and Sundays. On completion of this training, they are awarded an *Aymara* language teacher's diploma, but it does not include the title of teacher or the degree of Bachelor of Education.

This option is closely linked to the systematic process of eradicating the *Aymara* language that began during the years following the incorporation of the Tarapacá region into Chile. According to testimonies, this process was even taking place until midway through the twentieth century: there are accounts of repression and even punishment applied by teachers and authorities to *Aymara* speakers purely for using their native language to communicate (Mondaca, 2003). These memories have been passed on from generation to generation, generating mistrust among the parents. For their part, non-indigenous proxies do not necessarily express this reticence, often considering it interesting that their pupils learn an indigenous language (Gundermann et al., 2011).

Given the imperative to establish the *Aymara* Language course, efforts have been focused on encouraging students, who have quickly become motivated to participate in the course and encourage their parents to accept the initiative. The dynamics and strategies of games for study in the subsector have stimulated children to continue their learning at home, interacting in the *Aymara* language. They have also enabled parents—both *Aymara* and non-*Aymara*—to become increasingly motivated to participate, some even expressing their interest in learning the language.

There is currently a kind of renaissance of the *Aymara* language, due, among other things, to the fact that CONADI, as a counterpart of MINEDUC, has designed and carried out language teaching workshops, constantly finances *Aymara* language courses, and has even developed a diploma. These initiatives have also involved social actors such as the leaders of various organizations, non-indigenous teachers, and a diverse public that is showing a growing interest in learning the language. In this regard, the program has been limited in its scope. We believe it would be a

substantive contribution to extend teaching of the *Aymara* language to all schools in the region, which would significantly foster the fortification of the region's cultural identity.

7.6   Conclusions

The implementation of EIB in Chile's northern border area has revealed the cultural homogenization to which education has been subjected for almost two centuries, first under the Peruvian Republic and later within the process of integration into Chilean national ideology. In this sense, although it was created as a compensatory policy for the native peoples, EIB has not yet fully developed all of its potential, which is to become an intercultural pedagogical model for all regional and national education.

It can be argued that in the northern regions of Chile and throughout the country, EIB continues to promote the need to implement a hegemonic national curriculum that is lacking in true intercultural dialogue and which underlies the idea of integrating indigenous people into national society (Mondaca, 2003). This is manifested in EIB that is not continued between the different levels of education and lacks effective correlation of cultural content with the family, the community, and the local school (MINEDUC, 2011). All of this shows the absence of the systematization of ethno-content and its transmission in the curriculum by the community. Therefore, and to give just one example, although the contribution of traditional educators is valuable in this task, they have not yet been definitively integrated into the national education system. Similarly, conceptualizations used with regard to interculturality lack a solid theoretical framework. There is also great confusion regarding key issues such as identity, memory, culture, interculturality, multiculturalism, biculturalism, bilingualism, or indigenous education (MINEDUC, 2011).

In light of this, the incorporation of the Indigenous Language Subsector to promote bilingualism has been a very slow process. Created as an attempt to improve the learning of Spanish as a second language in the initial phase of basic education, the subsector was not projected to be used at higher levels. This situation changed radically with the emergence of the language councils, in which the community and the school participate, and which reflect a public policy (implemented during the last three years) that seeks to advance the subsector to secondary education levels in the schools targeted by MINEDUC's PEIB. The situation is no more encouraging in higher education where, despite the discourses about inclusion and integration, there is still great confusion about what interculturality really means. In spite of being located in multicultural border areas, many higher education courses simply do not have a subject that allows them to address this reality in the region, while on the courses that do, it is usually confused within the broad spectrum that covers the phenomenon of indigenous education.

We argue that the disadvantages and problems with the public policy and the investment of the EIB Program in the north of Chile during the last few decades make it essential and urgent to redefine the EIB educational policy implemented in

the area. This is a model that is limited exclusively to indigenous and rural contexts, which does not include urban settings or the multicultural and cross-border contexts of the area. This has led to the absence of a theoretical intercultural pedagogical model that trains all students in the northern border area of Chile in intercultural citizenship skills that allow them to develop in diverse contexts, seriously limiting any sociocultural and educational development in this part of the country.

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Chapter 8
The *Rapa Nui* Language Among Secondary School Students on Easter Island: Level of Self-Reported Proficiency in Relation to School and Ethnic Variables

Javier Corvalán and Sara Joiko

8.1 Introduction

Chile is the only Latin American country that has territory in Oceania, Easter Island or Rapa Nui.[1] Annexed by the country in 1888 and with a history of troubled relations between the native population and the Chilean administration (Cristino & Fuentes, 2010; Foerster, 2012), the island is a meeting point between two very different cultures with the growing imposition of one upon the other in relatively recent times (Fuentes et al., 2011).

The native population of the island is the *Rapa Nui* people, whose language has the same name. The *Rapa Nui* population living on the island numbers around 3,000, to which must be added between 2,500 and 3,000 non-*Rapa Nui* who also live permanently on the island (most of them are Chileans who are known as *continentales*—continentals or mainlanders). In the second half of the nineteenth century, a process of transculturation of the local population began on Easter Island, which, together with the modification of various aspects of their beliefs, worldview, and ideology, also heavily affected the use, lexicon, and structure of the *Rapa Nui* language, along

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[1] Even though no consensus has been reached on this matter, in this chapter we use the official name Easter Island for the territory and reserve the name *Rapa Nui* to denote the ethnic group or the title of the language.

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with the de facto imposition of Spanish as the official language of communication (Makihara, 2005a, 2005b).

Easter Island's linguistic history shows that its original language has been subjected to various influences and transformations after contact with Westerners. In this regard, one of the first processes was that which occurred with the Catholic missionaries of French origin who conducted their work on the island in the 1860s. In line with their experiences in other parts of Polynesia, these missionaries carried out their work with the *Rapa Nui* population mainly in the Tahitian language, preserving part of the original *Rapa Nui* lexicon and including words from French and Latin, a process that seriously transformed the original language of the island (Cristino & Fuentes, 2010). Also, due to commercial contact and the fact that a significant part of the island was later leased to a British livestock company, the *Rapa Nui* language received several lexical contributions from the English language (Pakarati, 2010). Finally, following Chilean annexation, particularly through the process of schooling carried out starting in the second decade of the twentieth century, the authorities imposed compulsory learning of Spanish for children (Corvalan, 2014; 2015), influencing the process regarding use of the native language.

Due to these circumstances and after several decades of confining use of the local language to private contexts, it was only after 1970 that a process of formal teaching of *Rapa Nui* began in schools, which, even though it was interrupted the following decade before being restarted in the 1990s, was the basis for a revival and relegitimization of this language, although specialists point out that it is still under threat (Makihara, 2005a, 2005b; Pagel, 2012). Easter Island is therefore currently a particular sociolinguistic scenario in which, as in other similar scenarios, the future of its native language will depend to a large extent on the level of proficiency of the younger generations. Investigating this aspect is the main objective of this chapter, which considers aspects related to schooling and ethnicity in order to achieve this.

8.2 Historical-Conceptual Background

There have been few sociolinguistic studies on Easter Island, with those by Gómez (1977; 1982; 1987; 1990; 2007), Makihara (2004, 2005a, 2005b), and Weber and Weber (1990) being of particular note. At the same time, there have been studies on the characteristics of the language itself, such as that by Englert (1978), on grammar by Du Feu (1986), and the recent research of Kieviet (2016), among others. Despite these references, it can be stated that analysis of the relationship between *Rapa Nui* language proficiency and other social variables, such as those linked to schooling, for example, are practically non-existent.

The historical background of the linguistic modifications on Easter Island shows that, besides the occasional visits of Western ships during the first half of the nineteenth century and the missionary activity mentioned above, these changes were probably reinforced by the abduction of a significant part of the population by Peruvian slave traders in around 1860 and the subsequent repatriation of some of the islanders.

There is a supposition that some of them must have at least learned the basics of the Spanish language during their period of captivity and that certain elements of that may later have been transferred to the language spoken on the island. In this respect, Fischer (2001) refers in broader terms to the widespread cultural, social, and political change brought about by the mass abductions and the subsequent release and repatriation of some of the survivors.

Annexation of the island by Chile in 1888 marked the imposition of Spanish as the language of the island's government and consequently the de facto subordination of the local language after it had already been modified by the aforementioned processes. One of the main institutional mechanisms of this linguistic imposition is the establishment of elementary schooling on the island in 1914, the objectives of which did not consider the preservation of the local language, but, on the contrary, proposed competency in Spanish as one of its central learning aims (Corvalán, 2015). Only from the 1970s onwards, as we have already mentioned, was any concern expressed to revive the *Rapa Nui* language, firstly, on the basis of a diagnosis that revealed the language was under threat, and subsequently as a consequence of writing school texts totally or partially in *Rapa Nui* language and its (only very partial) inclusion as an area of learning in the only school on the island at the time. Two local language scholars explain the situation from that decade to the next, stating that "the percentage of students in the first to sixth years of general basic education whose mother tongue or predominant language is Rapa Nui or who claim to be fully bilingual consistently decreased from 77% in 1977 to 66% in 1979, to 41% in 1983, and to 25% in 1989. In the meantime, the percentage of students whose sole predominant language is Spanish increased by 52% between 1977 and 1989. The current ratio, in 1989, of children who can speak Rapa Nui and children who cannot speak Rapa Nui, is almost the reverse of what it was 12 years ago, in 1977" (Weber & Thiesen, 1990:120).

It is important to note that on November 26, 1975, Decree 991 of the Chilean Ministry of Education (MINEDUC) was issued, adding some hours of *Rapa Nui* language teaching to the school curriculum, but this was repealed in 1984. The 1990s saw a change in Chile that impacted the subject, since, with the return to democracy in the country, a public institutional framework was created that that adopted some of the demands of native peoples to promote teaching and revitalization of their languages. The clearest recent examples of this process are the so-called Indigenous Law (No 19, 253), enacted in 1993, the existence of an Intercultural Bilingual Education program in MINEDUC since 1996, and the General Education Act of 2009, which refers to Chile as a multicultural country and establishes the obligation to disseminate original languages in the school system when a certain proportion of the students in a school belong to one of the native peoples recognized in the Indigenous law.

In sociolinguistic terms, Easter Island is in a situation of diglossia, as was originally defined by Ferguson (1959) and later supported by Fishman (1967). The former argued that diglossia refers to a situation in a territory where two varieties of the same language overlap, one of them generally being relegated to unofficial or domestic contexts in a relatively stable or non-conflictive situation. Fishman (1967) supports this with an analysis that, in our opinion, is more appropriate to account for the situation on Easter Island, since he conceives diglossia as a situation in which two or more

different languages coexist in the same territory, occupying different functions with one of them sometimes subordinating the other/s in official situations. In such cases, the speakers of the dominant or more prestigious language are often not proficient in the subordinate language, which has usually been the case in colonial and postcolonial scenarios. Thus, and from the sociological point of view, in certain situations the concept of diglossia refers to a reality of political domination and subordination, expressed in the linguistic field. In our view, this is an accurate account of what has happened in territories such as Easter Island, where the local language was relegated to the private sphere for at least half a century, reducing the number of speakers and where the process of revitalization and restoration only dates back only a few decades, as we have already stated. This situation of diglossia in Easter Island is mentioned by the Chilean linguist Gómez Macker, who wrote three decades ago that: "The oral Easter Island language has restricted use. It is limited to being the language of the home, of the street, of the times of 'recess' in the school. In it, the Easter Islanders talk about family, daily and local issues … Thus, its use is reduced to the intra-community relations of Easter Islanders. The Easter Island language is characterized by the privacy of its use and by its confinement" (1982: 482). On the other hand, Makihara (2004), referring to Easter Island, proposed the concept of colonial diglossia to emphasize the particular political and economic origins of the linguistic hierarchy established in this territory, as well as in others.

The initiatives supported by legal mandates since the 1990s, mainly at the school level on Easter Island, have sought to preserve and develop the *Rapa Nui* language in public spaces, such as schools, thus advancing ideally towards the constitution of a bilingual community (which is known as *additive bilingualism* in the official proposal of Chile's MINEDUC). A project of this nature and its implementation in school not without relevance in a case of colonial diglossia as the case of Easter Island, since the school scenario allows the use of the *Rapa Nui* language in a formal space, demarginalizing it from exclusive use in the private and domestic sphere. Along with this linguistic revitalization initiative in the last two decades, it should also be considered that school education has undergone remarkable development on Easter Island, includes a complete offering of secondary education (since 1987) and the consolidation of municipal (public) and subsidized private schools, both secular and religious (Corvalán, 2014, 2015). In terms of the project to revitalize and strengthen the language, the municipal elementary school (Lorenzo Baeza Vega) stands out, as it is the only public school in Chile that has full linguistic immersion for one of its sections, in this case in *Rapa Nui* language until fourth grade, while a parallel section of the same school carries out teaching in Spanish, but maintaining, as is required by the current educational regulations, language skills classes in *Rapa Nui*. A *Rapa Nui* language subject is currently taught as part of the curriculum for all students at the municipal secondary school level, as in the private schools, whether the students are of *Rapa Nui* origin or from the mainland.

8.3 The Research Conducted

8.3.1 Study Questions

The scenario described and particularly the formalization of teaching *Rapa Nui* in school education raises some questions from a sociolinguistic perspective with an emphasis on the school system. In order to answer them, we focus on the island's high school students, both islanders and mainlanders. A survey was chosen as the method of information collection because the aim was to ascertain the perception that young students on the island have of their own proficiency in the *Rapa Nui* language. The study was of an exploratory nature, since there is not a large corpus of previous research on this subject. Specifically, the questions we sought to answer were the following: (i) What is the self-reported level of students' proficiency in the *Rapa Nui* language? With this question, we were interested in observing the responses disaggregated by gender, age, grade, and school attended; (ii) What is the predominant language in the students' homes?; (iii) To what extent is the type of *Rapa Nui* ancestry (via both parents or via only the father or mother) related to the level of self-reported language proficiency?, (iv) To what extent are the grades obtained at school related to the level of *Rapa Nui* language proficiency?; (v) To what extent does having studied at the municipal elementary school (which has a *Rapa Nui* language immersion program) explain the proficiency of students in the local language over other variables, such as biparental *Rapa Nui* ancestry? As we can see, the first two questions are of a descriptive nature and are also conventional and basic in sociolinguistic analyses. The third question is intended to clarify the hypothesis of greater proficiency in the *Rapa Nui* language in cases of biparental descent from this ethnic group on the part of the student and of a possibly greater link to the mother's language, as is usually indicated in the literature on the subject. The fourth question explores the hypothesis of a correlation between *Rapa Nui* language proficiency and school performance, only so that such a relationship, if verified, could open up avenues for future research, the consequences of which might be relevant at the level of educational policy. Finally, the fifth question addresses the specificity of the island's educational system in terms of having a section in one of its schools in which classes are mainly taught in *Rapa Nui* language, as already mentioned.

The fact that the information was collected through a self-reporting survey and that it was also gathered from young people in secondary education is due to the following reasons. Firstly, the island's secondary school population is small and is concentrated in three schools, which made it possible to obtain census data on it, an aspect which, in itself, is a methodological advantage for any research. Secondly, the secondary school population was considered since, being a self-administered survey, this allowed better understanding of the questions by the students surveyed, compared to what we consider would have happened with students of basic education. Also, and as noted above, sociolinguistic data, especially in situations of diglossia, are particularly important to collect from the young population of a territory with a view to considering the future of the minority or subordinate language/s. Finally, the use

of self-reported data is commonly used in sociolinguistic surveys,[2] the alternative to which is the application of a language test, which implies considerable costs and difficulties and, very probably, the impossibility of collecting census data on a given population.

8.3.2   Methodology

The application of the census survey among the island's secondary school students (9-12th grade) was carried out in June 2012. The survey was answered by 93% of the official enrolment (the remaining 7% of students were absent from school on the day the survey was applied or were no longer students even though they were registered at the school), with the final number of cases being 270 individuals. Ten questions were set regarding language proficiency and another five regarding the students' ethnic background and self-reported school grades. For the purposes of data analysis and once the data had been codified, we proceeded to carry out descriptive and association analyses (chi-square and Cramer's V), which are shown in the following section.

8.3.3   Characteristics of the Students Surveyed

Most of the students (48.1%) surveyed studied at the municipal high school Aldea Educativa Rapa Nui, followed by the subsidized private school with shared financing (co-payment by families), Hermano Eugenio Eyraud (32.2%), and, finally, at the subsidized private school without shared financing, San Sebastián de Akivi (19.6%). There is a higher percentage of males (59.3%) among the students surveyed. Table 8.1 shows this characterization in greater detail.

Most of the participants are concentrated in the 14–18 age range. Participants over the age of 18 were generally those who have repeated a year (Table 8.2).

Finally, as can be seen in Table 8.3 on the distribution of students in relation to their ethnic origin in the both the municipal school and in the subsidized private school, Hermano Eugenio Eyraud, there is a high percentage of *Rapa Nui* students (90% and 76%, respectively). On the other hand, in the San Sebastián de Akivi school there is a greater balance between the students in terms of their ethnic origin (47% of mainland origin and 53% *Rapa Nui*).

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[2] See for example the fifth sociolinguistic survey carried out in the Basque Country (Servicio Central de Publicaciones del Gobierno Vasco, 2013) or the Sociolinguistic Profile of *Mapuche* and *Aymara* languages in the Metropolitan Region (CONADI-UTEM 2010).

Table 8.1 Total participants by educational institution

School	No of students	Percentage (%)	Percentage of males (%)	Percentage of females (%)
Liceo Aldea Educativa Rapa Nui	130	48.1	67.7	32.3
Colegio Hermano Eugene Eyraud	87	32.2	48.3	51.7
Colegio San Sebastián de Akivi	53	19.6	56.6	43.0
Total	270	100.0	59.3	40.7

Source Prepared by the authors based the survey applied

Table 8.2 Age of students

Age	Frequency	Percentage (%)
14 years	32	1.9
15 years	62	23.0
16 years	71	26.3
17 years	78	28.9
18 years	18	6.7
19 years	7	2.6
20 years	1	0.4
21 years	1	0.4
Total	270	100.0

Source Prepared by the authors based on the survey applied

8.4 Results

The presentation of the results is divided into three sections. First, the self-reported level of students regarding their proficiency in the *Rapa Nui* language in terms of oral proficiency, as well as (passive) understanding according to ethnic origin and specifically the type of *Rapa Nui* ancestry (maternal, paternal, or both), all from a descriptive analysis. The main language used in the students' homes is noted below—also from a descriptive approach—according to variables of ethnic origin and *Rapa Nui* ancestry. Finally, we present the construction of a language proficiency index according to school and ethnic variables using descriptive and association analyses between variables. These three sections are intended to answer the questions outlined previously.

Table 8.3 Ethnic origin of students by school

School	Percentage of mainlander students (%)	Percentage of *Rapa Nui* students[3] (%)	Percentage of students with *Rapa Nui* father and mainlander mother (%)	Percentage of students with mainlander father and *Rapa Nui* mother (%)	Percentage of students with *Rapa Nui* mother and father (%)
Liceo Aldea Educativa Rapa Nui	10	90	21	31	38
Colegio Hermano Eugene Eyraud	24	76	19	34	23
Colegio San Sebastián de Akivi	47	53	15	19	19
Total	22	78	19	30	29

Source: Prepared by the authors based on the survey applied

8.4.1 Self-Reported Level of **Rapa Nui** Language Proficiency

In order to establish the overall level of self-reported proficiency in the *Rapa Nui* language, two questions were asked, one of which concerned proficiency at the oral level and the other the students' passive understanding of the language. In each case, a 4-point scale was established (from nil to very good).

As can be seen in Figs. 8.1 and 8.2, and as would also be expected, students of *Rapa Nui* ethnicity are the ones who mostly stated they had good/very good oral proficiency in the language (62%), compared with only 15% of students of mainland origin who classified their proficiency as good. Within this latter group of students, it should be noted that fewer than half of them (42%) stated that their oral command of the language was nil and that none of them considered their oral proficiency to be very good. With respect to the very good category according to the students' type of *Rapa Nui* ancestry (Fig. 8.2), we observe that those whose parents are both of *Rapa Nui* origin are the ones who mostly reported this level of proficiency (28%), followed by those whose *Rapa Nui* ancestry came from the mother (14%), and finally (8%) those whose *Rapa Nui* ancestry came only from the father, which would tend to confirm the hypothesis of greater proficiency in the language when the link, if only from one parent, is via the mother.

As shown in Fig. 8.3, once again it is students of *Rapa Nui* descent who mostly reported having good/very good (passive) language comprehension (91%), compared

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[3] A "*Rapa Nui* student" is considered to be one with either one or two parents of *Rapa Nui* origin.
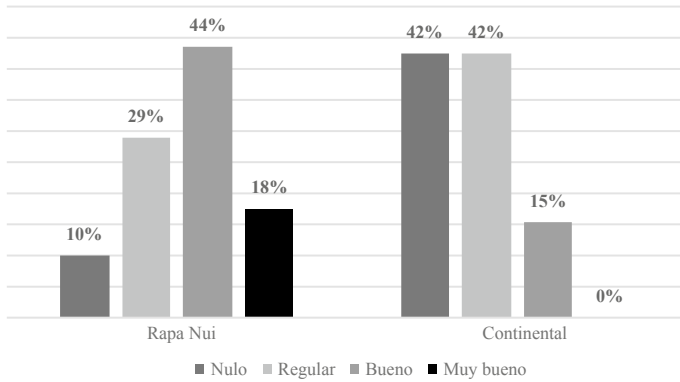
Fig. 8.1 Self-reported level of oral proficiency in *Rapa Nui* language by ethnicity of students (*Source* Prepared by the authors based on the survey applied)
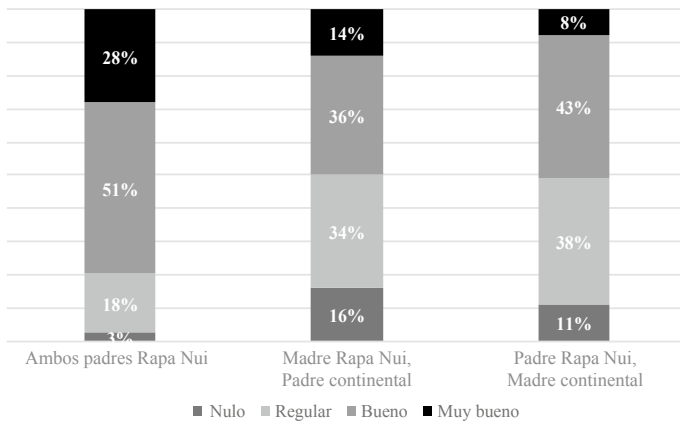

Fig. 8.2 Self-reported level of oral proficiency in *Rapa Nui* language by type of *Rapa Nui* ancestry (*Source* Prepared by the authors based on the survey applied)

with 39% of mainlander students in these categories. With respect to those in the very good category and the type of *Rapa Nui* ancestry (Fig. 8.4), it was students with *Rapa Nui* ethnicity via both parents who mostly reported this level of proficiency (68%), followed by those whose ancestry was via the mother (38%), and finally those whose *Rapa Nui* ancestry was only via the father (34%), which supports the aforementioned hypothesis.
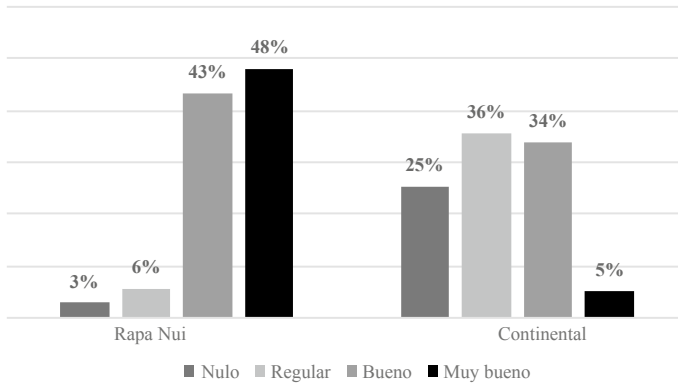
Fig. 8.3 Self-reported level of (passive) understanding of *Rapa Nui* language by ethnicity (*Source* Prepared by the authors)
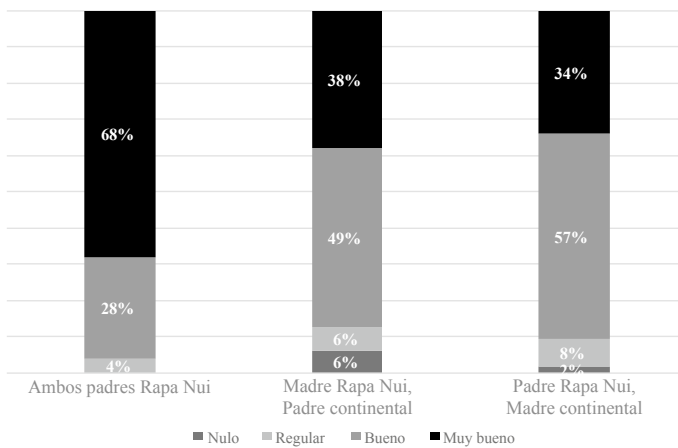
Fig. 8.4 Self-reported level of passive understanding of *Rapa Nui* language according to *Rapa Nui* ancestry (*Source* Prepared by the authors)

8.4.2 Main Language in the Students' Home

Exclusive use of the *Rapa Nui* language in homes is limited. Table 8.4 shows that of the total number of students (of mainland and *Rapa Nui* origin) only 1% speak *Rapa Nui* as the only language at home and 16% state that it is their predominant language for family communication. A total of 11% said that both languages were spoken equally at home and 43% said that Spanish was predominant, even though there was some presence of *Rapa Nui* in the communication of these families. This means that *Rapa Nui* is present in the home as the language of communication either as the predominant language or on a par with Spanish in 28% of cases, compared

Table 8.4 Main language of communication in the home

Language used in the home	Frequency	Percentage (%)
Rapa Nui only	2	1
More *Rapa Nui* than Spanish	42	16
Rapa Nui and Spanish alike	29	11
More Spanish than *Rapa Nui*	115	43
Spanish only	78	29
Total	226[5]	100

Source Prepared by the authors based on the survey applied

Table 8.5 Main language of communication in the home according to ethnic origin

Home language	*Rapa Nui* (%)	Mainlander (%)
Rapa Nui only	1.0	0.0
Other language	1.0	1.7
Rapa Nui and Spanish alike	13.8	0.0
More *Rapa Nui* than Spanish	19.5	1.7
Spanish only	15.2	78.0
More Spanish than *Rapa Nui*	49.5	18.6
Total	100.0	100.0

Source Prepared by the authors based on the survey applied

with 43% where it is the secondary language. On the other hand, Spanish is totally predominant in 29% of cases and monolingualism—either Spanish or *Rapa Nui*—occurs in 30%[4] of homes. In summary, Spanish is the predominant language in the homes of the island's young people in secondary education, being used more than *Rapa Nui* in 83% of cases.

In analyzing home communication practices by the ethnic origin of students, Table 8.5 shows that in *Rapa Nui* students' home communication (regardless of whether their *Rapa Nui* ethnicity it is only through their mother or father or both) the local language is present to some extent in 84% of cases, even though it is prioritized over Spanish in only 17% of them. On the other hand, Spanish is present as the language of the home in 65% of the cases, even though it is only absolutely predominant in 15% of the cases (Spanish monolingualism in the home). The most relevant fact is that full communication in *Rapa Nui* language at home occurs in only 1% of the cases. This allows us to conclude that the *Rapa Nui* population has a particular diglossia, since it is not a dominant language in the private sphere of the home, but the majority tend to share it with Spanish and in most cases as the minority language.

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[4] We refer to cases and not families, since two or more respondents may be from the same family because some of the students are siblings and live together. The anonymity of the instrument did not allow us to identify and isolate that variable.

[5] Cases that did not answer and which stated "other" were not included in this analysis.

Table 8.6 Main language of communication in the home according to *Rapa Nui* ancestry

Home language	Both parents *Rapa Nui* (%)	*Rapa Nui* mother, mainlander father (%)	*Rapa Nui* father, mainlander mother (%)
Rapa Nui only	1.3	1.3	0.0
Other language	1.3	1.3	0.0
Rapa Nui and Spanish alike	19.2	12.7	7.5
More *Rapa Nui* than Spanish	32.1	13.9	9.4
Spanish only	9.0	19.0	18.9
More Spanish than *Rapa Nui*	37.2	51.9	64.2
Total	100.0	100.0	100.0

Source Prepared by the authors based on the survey applied

Table 8.6 shows that—considering only young people of *Rapa Nui* descent—the native language is mostly used in home communication when both parents belong to that ethnic group (reaching 33% within that category), followed by cases where only the mother is *Rapa Nui* (15.2%) and where only the father is *Rapa Nui* (9.4%). As a consequence, and also as expected, biparental *Rapa Nui* ancestry is a strong determinant of the level of linguistic predominance in the household; however, it is interesting that, on the one hand, this variable increases so markedly (by factors of two and three) compared with situations in which only one of the parents belongs to this ethnic group, and, on the other hand, even in cases in which both parents are *Rapa Nui*, Spanish is the predominant language of the home in almost half of them (46%). It is equally striking that, in cases where both parents are *Rapa Nui*, the native language is the only one used at home in just 1.3% of cases.

8.4.3 Language Proficiency Index According to Ethnic and School Variables

We created a linguistic proficiency index to further analyze the self-reported levels of *Rapa Nui* language proficiency (Table 8.7). Below are some descriptive tables and association analyses (chi-square, Cramer's V, and ANOVA according to the level of measurement of the variables considered) with respect to variables such as ethnicity, gender, age, grade point average, and educational establishment attended by the students.

According to Table 8.8, only 10.4% of the students are classified as having no language skills, while 54% are classified as having high skills (sum of good and very good categories).

Table 8.7 Creation of *Rapa Nui* language proficiency index

Variable (V)	Categories	Score
1. Oral proficiency in *Rapa Nui* language	Very Good	4
	Good	3
	Regular	2
	Nil	1
2. Passive language proficiency	Very Good	4
	Good	3
	Regular	2
	Nil	1
Calculation of the domain index (ID) ID = (V1 + V2)/2		

Source Prepared by the authors based on the survey applied

Table 8.8 *Rapa Nui* language proficiency index

Scale	Frequency	Percentage (%)	Cumulative percentage (%)
Nil	28	10.4	10.4
Regular	96	35.6	45.9
Good	109	40.4	86.3
Very good	36	13.3	99.6
Total	269	99.6	
No data	1	0.4	
Overall total	270	100.0	

Source Prepared by the authors based on the survey applied

Table 8.9 shows that 64% of students of *Rapa Nui* origin are at the good/very good levels of language proficiency and only 3% of them are classified as having no knowledge of the language. The most striking result is that of learners from the mainland, as only a third of them state they have no knowledge of the language and 17% even say they have a "good" level. There are probably two reasons for this: on the one hand, attendance of *Rapa Nui* language classes, since, as a consequence of the legal changes made with regard to indigenous languages in recent decades, they are given to all students on the island. On the other hand, the island has a growing number of permanent residents from the mainland (non-*Rapa Nui*), which allows us to hypothesize that this residency in the case of students from the mainland and the relationships they have with their *Rapa Nui*-speaking peers, coupled with the growing revitalization of the language on the island and the formal classes mentioned, have impacted the linguistic proficiency of young mainlanders.

Table 8.10 shows how having two parents of *Rapa Nui* ancestry results in greater language proficiency among students than among those who are descended from that ethnic group via only one of the parents. Meanwhile, nothing conclusive can be seen in the comparison between maternal and paternal descent—unlike the data in the

Table 8.9 *Rapa Nui* language proficiency index by ethnicity

Ethnic origin of student	Proficiency index			
	Nil (%)	Regular (%)	Good (%)	Very good (%)
Mainlander	37.3	45.8	16.9	0.0
Rapa Nui	2.9	32.9	47.1	17.1
Total	10.4	35.7	40.5	13.4

Source Prepared by the authors based on the survey applied

previous section—since for those students whose mother is of *Rapa Nui* descent the sum of the good and very good categories reaches 52% and for those with a *Rapa Nui* father it is 54%. When applying the statistical test of association of variables, we can observe an association in this respect (sig. 0.000) which is of a slight nature according to Cramer's V statistical test (0.353). In short, the greater self-reported proficiency in the language is explained by both parents being of *Rapa Nui* descent and not, when only one of them is, by the fact that it is specifically the mother or father.

With regard to the gender of the students, Table 8.11 shows that there is no significant statistical association between this and the *Rapa Nui* language proficiency index, as is also shown in the following tables. A statistical analysis of the above table shows a significance level (chi-square) of 0.694, which supports the lack of association between the student gender variable and the *Rapa Nui* language proficiency index.

Table 8.10 *Rapa Nui* proficiency index by ancestry

Type of *Rapa Nui* ancestry	Proficiency index			
	Nil (%)	Regular (%)	Good (%)	Very good (%)
Rapa Nui father	1.9	43.4	47.2	7.5
Rapa Nui mother	6.3	41.8	38.0	13.9
Both parents *Rapa Nui*	0.0	16.7	56.4	26.9
Total	2.9	32.9	47.1	17.1

Source Prepared by the authors based on the survey applied

Table 8.11 *Rapa Nui* proficiency index by student gender

Gender	Proficiency index			
	Nil (%)	Regular (%)	Good (%)	Very good (%)
Male	10.1	33.3	43.4	13.2
Female	10.9	39.1	36.4	13.6
Total	10.4	35.7	40.5	13.4

Source Prepared by the authors based on the survey applied

Table 8.12 *Rapa Nui* proficiency index by age

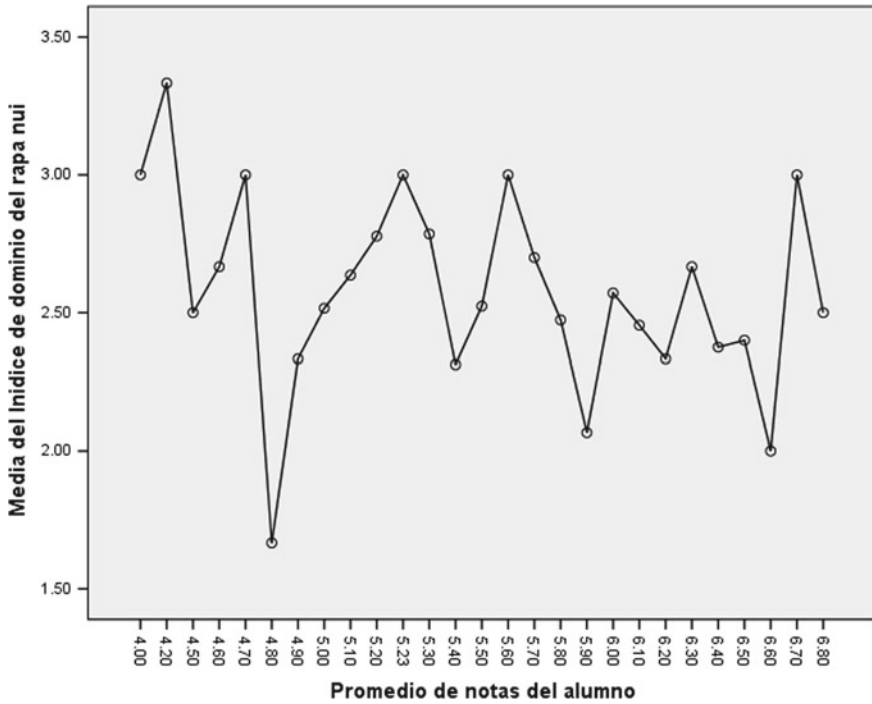| Age	Proficiency index			
	Nil (%)	Regular (%)	Good (%)	Very good (%)
14 and 15	17.2	38.7	34.4	9.7
16	8.5	28.2	46.5	16.9
17	5.1	33.3	47.4	14.1
18 and older	7.4	51.9	25.9	14.8
Total	10.4	35.7	40.5	13.4

Source Prepared by the authors based on the survey applied

The statistical analysis carried out shows that, with respect to the age of the students, there is also no significant association with the level of language proficiency (sig. 0.074), as can be observed in Table 8.12. The age variable—obviously related to the grade or school year of the students—is particularly interesting, since it appears to demonstrate that the level of *Rapa Nui* language proficiency does not increase significantly as students progress through secondary school. It seems reasonable, therefore, to hypothesize that language proficiency is explained primarily by proficiency and use in the home, and that what the school experience does—at least in some cases—would be to reinforce or maintain it. Part of this hypothesis is also supported by what is argued below.

The following step in the study was to examine the students' academic results in terms of their self-reported grades (overall grade point average in the previous year) and the *Rapa Nui* language proficiency index. Since both variables are quantitative, we performed an ANOVA analysis. The analysis is primarily based on the variance (μ) of the groups according to their scores on the dependent variable (the *Rapa Nui* proficiency index).

Both Fig. 8.5 and Table 8.13 show that there is no relationship between the variables of student grades and *Rapa Nui* language proficiency (since in the table the significance is greater than 0.05). In other words, the self-reported grade point average of students does not influence their *Rapa Nui* language proficiency. However, the graph also shows that there is not a clear trend, that is, no linearity can be observed in the relationship between the two variables.

The results of the variable of the school attended by the student are shown in Table 8.14. To observe whether there is an association between the two variables, that is, if the student's school is related to the *Rapa Nui* proficiency index, we use the statistical comparison based on the chi-square test, which produced a significance level of 0.017, that is less than 0.05, which means that it is possible to assume there is an association between the student's school variable and the *Rapa Nui* proficiency index. In order to specify this association, we used Cramer's V, which in this case shows a low level of association (0.240), which indicates that there is an association but the relationship is low. However, in our view, this statistical relationship should be understood mainly as a consequence rather than a cause, since it is possible

Fig. 8.5 *Rapa Nui* proficiency index and grade point average (*Source* Prepared by the authors based on the survey applied)

Table 8.13 *Rapa Nui* proficiency index and grade point average (ANOVA)

	Sum of squares	Gl	Root mean square	F	Sig
Intergroup	18,053	26	0.694	0.961	0.523
Intragroup	170,532	236	0.723		
Total	188,586	262			

Source Prepared by the authors based on the survey applied

that students' attendance at a school is determined by their prior command of the language, given that it is regularly practiced at home.

Table 8.14 *Rapa Nui* proficiency index and school

School	Proficiency index			
	Nil (%)	Regular (%)	Good (%)	Very good (%)
Liceo Aldea Educativa Rapa Nui	4.7	31.0	47.3	17.1
Colegio Hermano Eugene Eyraud	14.9	37.9	36.8	10.3
Colegio San Sebastián de Akivi	17.0	43.4	30.2	9.4
Total	10.4	35.7	40.5	13.4

Source Prepared by the authors based on the survey applied

8.5   Conclusions

With respect to some of the diagnoses made earlier about *Rapa Nui* language proficiency (outlined in the section Historical-Conceptual Background) and considering that our data collection was based on self-reported language proficiency, the panorama does not seem entirely negative regarding the objective of preserving the *Rapa Nui* language. As we have seen, among *Rapa Nui* youth, the native language is present to some degree in home communication in 85% of cases, and a third of students speak it with their families at the same or greater frequency than they speak Spanish. As stated in the introduction of this article, the situation of the *Rapa Nui* language is maintained for most of the young people who practice it in a diglossic state, even though the formalization of its use in school is altering this situation since it implies the use of the *Rapa Nui* language in a space outside the family.

We believe that there are five important aspects to explore in future studies regarding the data and partial conclusions we have presented. The first is that the level of the students' language proficiency is related to their ethnic background rather than other variables (educational, for example) and that it is this that seems to determine their admission to educational options where the *Rapa Nui* language and culture is most reinforced, as in the case of the municipal elementary and secondary schools. In another study (Corvalán, 2014), we noted that most of the students in this secondary school came from the municipal school where the *Rapa Nui* language immersion program is taught, and that course has an emphasis on teaching the island culture. At the same time, we were able to observe that, at the secondary school, and therefore also at the municipal school, there is a greater presence of students whose parents are both of *Rapa Nui* descent than at the other schools. This allows us to conclude, at least hypothetically, that the role of such school options would principally be maintaining and reinforcing linguistic proficiency that comes from the home, but that, for the same reason, this would not have a significant impact on attracting families and students of medium or low proficiency who want to acquire advanced linguistic skills.

The second relevant aspect is the need to deepen the relationship between *Rapa Nui* language proficiency and students' levels of educational achievement. In the analyses presented in this paper, we point out that, at least as far as school grades are

concerned, there seems to be no such relationship, which has important consequences for "educational policy", since the literature on strengthening minority languages tends to be supported by higher overall school performance of students, among various other arguments. In any case, it is clear that, in the case of Easter Island, more in-depth analysis is required on this subject.

Thirdly, we believe it is important to analyze the preferences of the *Rapa Nui* population with respect to the educational alternatives that are offered to them, in terms of greater or lesser teaching of their native language. The questions raised here are related to with whom and on the basis of what arguments do they prefer one option or the other and the consequences that this has for strengthening the language, cohesion, and development of the *Rapa Nui* people.

Fourthly, it seems to us that future qualitative analyses should investigate key aspects for maintaining and strengthening the *Rapa Nui* language, such as the dynamics of language in the home and in school. Finally, the data we have provided suggest the importance of studying the linguistic exchanges between students of *Rapa Nui* descent and those from the mainland, which would allow us to clarify the linguistic dynamics that currently prevail on Easter Island and that determine both the retention and the change of their native language.

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Chapter 9
Education, Indigenous Peoples, and Interculturality in Chile / *Ka Ma'a Te Mau O Te Kãiŋa*

Maria Virginia Haoa, Paulina Torres, and Camila Zurob

9.1 Introduction

A critical approach to indigenous education policies in Chile recognizes that language and culture should not only be accepted as valid content for education, but above all as a way that allows people to build a positive commitment to the contemporary reality of their own culture and, therefore, inspire sovereignty in the individual and the cultural group (Montecinos, 2004). Indigenous knowledge is a potential tool for integrating parents and other community members as active educators, encouraging their participation in their children's educational interests and needs. Making room for this knowledge is also a challenge for existing school institutions. On Easter Island, the revitalization of the language and the enhancement of local knowledge at school has been a constant struggle. Although state policies on intercultural education in Chile are beginning to recognize that the participation of indigenous communities is necessary in formal education, the lack of strategies to involve them in this work has become more evident (Williamson, 2012). In this chapter we describe part of the history of intercultural education on Easter Island, its relationship with policies of Intercultural Bilingual Education (EIB, by the Spanish acronym) in Chile, and the space that the *Rapa Nui* people have used for the inclusion of their knowledge in the curriculum.

We begin with a brief section on the context, a view of the period in which formal Chilean education began to develop on Easter Island, since we believe that a reinterpretation of the colonial history of the island is essential to understand the scenario that intercultural education faces there today. Our aim in this chapter is to establish a precedent for moving towards the contemporary reality of the *Rapa Nui* educational programs being implemented and their current challenges. Fundamentally, this is about recognizing that indigenous voices must be heard, valued, and positioned in

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such a way that they can be part of the construction of history in such a way that, by understanding the past, the imagined future that is projected for education can be conceived. This requires opening up the school to the communities and connecting the learning process of children with their social and cultural reality. We ask ourselves: to what extent has this been possible?

9.2 Reconstructing History in Order to Recount It: A Hundred Years After María Aŋata

"Ministry of Public Instruction/Santiago, June 3, 1914/ Nº 3171

> DECREE: After the customary deposit, the Treasury of Santiago will advance to Mr. JOSE IGNACIO VIVES SOLAR, appointed by decree on this date as preceptor of the rural mixed school created[1] for Easter Island, the salary and bonus corresponding to the last seven months of the present year. (Ministry of Education, Vol. 3199 in Foerster, 2012b, p. 2)[2]
>
> School was duly begun, but after a few days the children ceased to appear, the master declared he "was not an attendance officer", and from then till we left, nearly a year later, no school was held; the last we saw of the blackboard and counting-frame, they were rotting in a field some two miles off, where they had been taken by the French marooned sailors for use in some carnival pony-races (Routledge, 1998, p. 151)[3]

José Ignacio Vives Solar was the first teacher sent from Chile to Easter Island with instructions to establish a school there. The appointed preceptor arrived on the island on August 5, 1914, on board the Chilean Navy training vessel General Baquedano, in the midst of the Rebellion of Aŋata. This is considered "one of the most important indigenous uprisings against the colonialist domination of the island and the oppressive living conditions imposed by 'Compañía Explotadora' [de Isla de Pascua]" (Fuentes et al., 2011, p. 148). For others, "The historic resistance of Rapa Nui began in 1914" (Araki & Teave, 2013, p. 258).

After the 1888 Agreement of Intent by which Chile became a "friend of the place" (Report of the Historical Truth and New Deal Commission, hereinafter CVHNT, 2003, p. 277), the state inaugurated a policy of having private intermediaries that would maintain control of the island, supporting the continuity of sheep farming

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[1] There was no such school 'created', but the priest Zósimo Valenzuela informed Monsignor Edwards of his visit in 1911 that: "behind the church and forming a single body there is a room which in other times was a school and which could well serve that purpose if there were a teacher to teach" (Valenzuela, 1911, in Foerster, 2012b, p. 1). The church was built by the *Rapa Nui* people with French missionaries in Haŋa Roa. Before 1914, the only records related to systematic instruction by persons outside the indigenous community refer to catechesis carried out by Catholic missionaries (Cristino et al., 1984, p. 70), in addition to a brief attempt between 1896 and 1901, during the administration of Alberto Sánchez Manterola (administrator of CEDIP and representative of the state of Chile as Maritime sub-delegate), whose wife gave sewing classes (Arredondo, 2012, p. 60).

[2] We would like to thank Rolf Foerster and his team for sharing the progress of Fondecyt Project Nº 1110109 (December 2012). Their work has allowed the recovery of invaluable archives for the reconstruction of Easter Island's colonial history.

[3] The book was originally published in 1919.

activities between 1895 and 1953. Compañía Explotadora de Isla de Pascua (CEDIP or the Company), a subsidiary of the Scottish company Williamson, Balfour and Company, had leased the island between 1903 and 1953 (Fischer, 2005, p. 257).[4]

It may have come as a surprise to Professor Vives that circumstances accelerated his interim appointment as Maritime sub-delegate (and until 1917), making him the first Chilean representative on the island who was not also an employee of CEDIP (Fuentes & Moreno Pakarati, 2013). He launched a third (provisional) attempt by Chile to impose state authority on the island[5] and to carry out a "civilizing mission" (Simon & Smith, 2001). On that occasion, the *Rapa Nui* community, represented by María Aŋata Veri Tahi as leader, once again demanded[6] respect for their rights to the land and animals, and denounced the mistreatment by the Company's administrator, the Englishman Henry Percy Edmunds, who was also the Maritime sub-delegate up to that time.

Maria Aŋata was a woman with considerable influence among the *Rapa Nui* people (Moreno Pakarati, 2011, p. 67), who used religious language to express her demands.[7] Katherine Scoresby Routledge—a British woman who arrived a month before Vives to investigate "the mystery of Easter Island" about which she would later publish a book (1919)—wrote that "An old woman had a dream that the island belonged to them, and all the livestock, though the latter had of course been imported by Europeans. They therefore defied all authority and for five weeks made repeated raids on both sheep and cattle, eating their fill and destroying far more than they could consume" (Routledge, 1917, p. 326). It was in this context that the training ship General Baquedano arrived. The newly arrived preceptor also left us a series of chronicles of his experiences. Of the day he landed, he tells us:

> 'La Baquedano' had a mishap at the entrance of Anga Roa [sic], as a piece of the rudder broke, forcing her to stop for about three hours to compose herself. And Anata (sic) explained to her people that God was with them as she prevented the ship from moving forward to give time for her orders to be carried out. Finally, at about four o'clock in the afternoon, she was able to cast off her anchors and immediately Daniera[8] came on board with her staff. After

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[4] There is a wide range of works related to Easter Island's colonial history. A discussion of the versions of the 1888 agreement can be found in the CVHNT report (2003) and in the works of Gómez (2010) and Delsing (2009). The history by S. R. Fischer (2005), in English, has broad scope and great detail. Recent publications allow a more in-depth perspective of the establishment of Compañia Explotadora and the Chilean colonization in the work of Foerster (2010, 2012a) and in the book edited by Cristino and Fuentes (2011), among others. For further details see references.

[5] Bear in mind that previous initiatives had failed: that of Pedro Pablo Toro (1888–1892) and that of Sánchez Manterola (1896–1901).

[6] The continuity of the *Rapa Nui* 's demands for land is evident from the historical analysis. Relevant sources can be found in the CVHNT report (2003) and in the writings of the priest Bienvenido de Estella (1920).

[7] For an analysis of this historic moment loaded with symbolism, see the work of historian Nelson Castro Flores. The author refers to the uprising led by Maria Aŋata as a millenarianist one (2006, 2011).

[8] This refers to Daniel María Teave a Haukena (also known as Taniera 'Korohua'); son-in-law of María Aŋata and one of the main figures in the insurrection. See Hotus and the Council of Chiefs (1988).

respectfully depositing the holy ark on the deck, she took out a thick roll of paper and began reading her manifesto. It began: "There is no power on earth but that of God, and He alone rules over Easter Island" and she followed with a long explanation of the prophetic dreams they had had and she related the events of recent times. (Vives Solar, 1917b, p. 663)

The written words of Taniera Korohua's speech show us the clear awareness of what was being disputed at the time: power on the island.[9] According to Vives:

In truth, no one on the ship understood a word and believed that it was a welcome greeting, but Mr. Edmunds having arrived with Tepano,[10] Manara and others, explained to the Commander Mr. Almanzor Hernández the truth of what had happened. Mr. Merlet[11] was also on the ship and in view of the seriousness of the events he asked for the imprisonment of the ringleaders, and Daniera with five of her generals were placed in the brig. (1917b, p. 663)

This distance between the characters mentioned here or, rather, this difficulty in understanding between the two parties, as well as the questioning of the power of some to define the truth of what happened over others, has been present throughout the history of intercultural relations between Easter Island and Chile. In the analysis by Foerster, Montecino, and Moreno, it is clear from the historical documents that attest to the foreign perspective,[12] that "the perception of the community and its components are built on negativity and devaluation. The use of the word 'canac',[13] used at the time to refer to Chinese slaves, to name the Rapa Nui, shows the eagerness to erase their identity and the subordinate concept of their members. The devalued view of the community … prevents it from being understood as a nomos and as an agent" (Foerster et al., 2013, p. xx).

Vives closes his article by saying that the "young officer" of the Baquedano training ship did not give "importance" to the events that took place:

However, since Daniera Corohua had material evidence against him of his insurrection, which was the letter addressed to Mr. Edmunds, the Commander could not refuse to take him to the continent as a prisoner, but the islanders were made to believe that he was only going to present his complaints to the President of Chile. And thus ended the reign of God, which the Easter Islanders do not lose hope of seeing repeated. (1917, p. 664)

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[9] According to Fuentes, Moreno, and Montecinos, "this rebellion had the effect of initiating a series of significant changes in the political structure of the colonial presence on the island" (Fuentes et al., 2011, p. 148). These changes were extended in the years to come, particularly after the denunciation of Monsignor Rafael Edwards, which was widely commented on in the Chilean press of the time (see Foerster, 2011).

[10] He refers to Juan (Iovani) Tepano a Rano; "The first cacique chosen by the Chilean Navy to represent the natives … by decree of Captain Basilio Rojas on July 27, 1902" (Moreno Pakarati, 2011, p. 70).

[11] This refers to Enrique Merlet, who was the local manager of the Company in Valparaíso (Fischer, 2005, p. 157).

[12] Their analysis is based on a much larger body of documents than those discussed here, including letters from missionaries, the Navy archives, and other historical documents produced between 1864 and 1888, the year of the "Agreement of Intent. See Foerster et al. (2013).

[13] It is also common to use the word *kanaka* (e.g., Estella, 1920), which refers to the Hawaiian word for "person" (e.g., *kanaka maoli*). In *Rapa Nui* language, it is equivalent to the word *taŋata*.

Seventy years later, Alberto Hotus wrote that "Daniel María Teave died mysteriously in Chile, as did Simeón Riroroko. It has never been officially heard on the island what caused these two deaths or where their bodies were buried. It is worth asking what happened to the promise of protection and progress made by the Chilean authorities through Captain Policarpo Toro on September 9, 1888?" (1987, p. 9).

The story does not have a happy ending and its lesson is demoralizing for the *Rapa Nui* people. The historical accounts, the same ones that speak of fabulous legends, stories of ancient heroes and customs that have now fallen into disuse, are mostly created by white men[14] who not only witnessed the "events on the Island", but also permeate the text with their particular interests, their will of truth, in the sense of Foucault (1970). Therefore, the use of contemporary sources and the voices of the *Rapa Nui* to understand the colonial power structures on Easter Island implies recognizing, as Sahlins terms them, the "narrow intentions" of their authors (1997, p. 10). This is the case of Vives, but also of many other missionaries, travelers, archaeologists, anthropologists, and historians who obtain their information from *Rapa Nui* people who are not always recognized as authors of the text, and who inform the stories we know today to a large extent.

This is not the place to go further into the history of Easter Island or its education, for which there would be nothing more arbitrary than dating its origins to 1914, as the contrast of the epigraphs indicates.[15] We would like, however, to take advantage of this coincidence to celebrate Maria Aŋata's vision and the need to recount the history of the *Rapa Nui* people from a critical and committed perspective. We appreciate the recent interest in the recovery and reinterpretation of sources that allow a "dialogical construction of history" (Foerster, 2012d), illuminating the analytical invisibility (Montecino, 1997) of *Rapa Nui* voices.

We shall conclude this section by recalling that each society employs different strategies to understand the world. Through its means of expression and communication, and the transmission of these over time, it builds itself as a people. Language—and the native language, whose affective component is undeniable—is the means of reliably transmitting what surrounds us, in accordance with our cultural realities. It is through language that we also create our stories, and the historical construction of a people simultaneously implies voice and silence, memory and oblivion.

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[14] The case of Katherine Scoresby Routledge, cited here, is, however, an exception: born into a rich and prestigious English family in 1866, Katherine rebelled against Victorian values, becoming one of the first women graduates of Oxford University and the first woman archaeologist to work in Polynesia (see Van Tilburg, 2003).

[15] We are referring to education in its broad sense, which is part of the culture and therefore begins much earlier, and also to its current narrow sense: compulsory formal education, as we know it today, would be established with greater force on the island in the 1930s onwards.

9.3 Interculturality in the World's Most Remote School

In this section we briefly discuss the educational process to emphasize that the presence (or absence) of the *Rapa Nui* language and culture in the classroom is a theme that has been present in formal education since it began on the island.

Bilingual interculturality has always been part of formal education in Rapa Nui in some way. The historical record suggests that the educational mission initially imposed on Easter Island by the Chilean authorities was mostly based on teaching of Spanish as the first priority, ignoring the educational value of the native language. In turn, "The Rapa Nui's positive evaluation of Spanish as the language of trade and litigation was an important motivation in the development of bilingualism. Communication in Spanish proved crucial, for example, in the Rapa Nui's numerous attempts starting in the 1890s to negotiate for better treatment by the company and later direct appeals with the government to bring a civil administration to the island" (Makihara, 2004).

As early as 1917, Vives wrote the first bilingual educational text: *Te Poki Rapanui: Te puka mo hakama'a e ma oriai ite tangata honui o Rapanui* (The Easter Child: a book of reading and useful knowledge for the use of the inhabitants of Easter Island).[16] Vives locates the island in the global context: He refers to the geography and major characteristics of other islands, countries, and their respective colonizers, concluding with "Easter, which belongs to Chile, and whose religion is Roman Catholic" (Vives Solar, 1917a, p. 15). The book continues with the creation of the Earth and man by the Christian god, the discovery of America, the struggle with the *Mapuche* people, and Chilean independence, "after which the Chileans have always elected very good presidents who have made the people happy" (Vives Solar, 1917a, p. 31). In general terms, the book would be a kind of bilingual syllabary (*Rapa Nui*-Spanish), which tries to translate the basic knowledge of the Western world into *Rapa Nui*; that is, it establishes references to enter into such an educational worldview. The school is thus a space where the *Rapa Nui* will be able to access the Spanish language and, therefore, the symbolic universe of the "whites", "Chileans", "Westerners".

It is not clear from the available literature whether the book was actually used to teach *Rapa Nui* students on the island.[17] What can be stated is that in the intermittent classes conducted by Vives-Solar he had the support of a native assistant, Juan Araki Bornier (Englert in Foerster, 2012b, p. 60), whom Friar Estella described as "the most intelligent of the Easter men" (1920, p. 105). In the years to come, successive sub-delegates took over the administration of the school with the support of *Rapa*

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[16] *Rapa Nui* language notation lacked the conventions that exist today, however, this book is the first published in *Rapa Nui* language with a Latin alphabet. The book was reprinted in Santiago by Imprenta Cervantes years later, and extended and 'arranged' by the author. See Vives Solar (1923).

[17] At the time of the publication of Te Poki Rapanui, Vives Solar had been relieved of his duties in response to an accusation made by Bishop Rafael Edwards; namely, "that the preceptor does not render any service on the Island and leads a shameful life, and that it is necessary to appoint a mixed school preceptor for Easter and to provide them with all the necessary elements" (Edwards 1916, in Foerster, 2012b, p. 5).

Nui people.[18] From 1917 onwards, the sub-delegate was responsible for supervising the performance of the school and enforcing compulsory attendance for all children between seven and 14 years of age.[19]

In 1937, Bishop Edwards obtained the Vatican's approval to transfer the "spiritual tuition" (Arredondo, 2012, p. 67) of Easter Island to the Apostolic Vicariate of Araucanía, and Capuchin friar Sebastian Englert was subsequently established as the permanent pastor of the church on the island. The following year, Monsignor Guido Beck, vicar and bishop of the Apostolic Vicariate of Araucanía, traveled to Easter Island to introduce the nuns Margarita Maria Lespay and the German Gertrud Koetter, from the congregation of the Missionary Catechist Sisters of Boroa (Cristino et al., 1984, p. 35). The elementary school Fiscal N°72 on Easter Island would then remain under the responsibility of the "nuns"—as the missionary sisters are remembered on the island—until 1971 (Arredondo, 2013, p. 124).[20]

From then on, the school operated regularly and a register of school activities was kept from 1939 onwards (Cristino et al., 1984, p. 72). In this record, we find clear references to the difficulties caused by teaching of Spanish for the "advancement" of educational work. In 1941, it was stated that:

> ... to appreciate the educational work carried out by the nuns Sister Marguerite and Sister Gertrudiz, we must consider that they had to struggle, with patience and admirable constancy, against the idiosyncrasies of the students and above all against the Rapa Nui language, since the primary need was to teach Spanish. (School Register 1941, December, in Foerster, 2012b, p. 37)

These impressions, along with the recognition of the nuns' "selfless work", are typical of the visit reports recorded in the school register by government officials sent to Easter Island. The struggle against the native language did not prevent some of the nuns from learning to communicate in *Rapa Nui* with their students.[21] From this perspective, we can say that formal education on Easter Island has always been intercultural and bilingual, since people from different cultural groups have always

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[18] This is the case of Mariana Atan and Andrés Chávez, who were appointed as principal and teacher of the school, respectively, by sub-delegate Carlos Recabarren Larahona, who served on the island between 1926 and 1928.

[19] The obligations of the sub-delegate include "sending for the children who do not attend and applying the penalty of 1 to 6 hours of work of the parent who refuses to send the children to school for more than a week. This penalty could be applied in the absence of the father, or whoever assumed his role, whether a man or a woman, notwithstanding the corresponding school punishments. The sub-delegate was also responsible for granting permission for a child to miss school due to illness or some other serious cause" (Cristino et al., 1984, p. 70).

[20] That year, administration of the school was under the control of Jacobo Hey Paoa for a brief period, although some of the missionary sisters continued working on the island for another three years. They "generally spent two to three years on the island and only some remained for decades" (Foerster, 2012c, pp. 1–2).

[21] "They were aware that the greatest work of the school was teaching Spanish (everything was taught in Spanish), however, all knew the value of the native language for teaching the early years; some of the nuns learned Rapa Nui, especially Margarita Lespay Manquepán (a native of the Huilliche area of San Juan de la Costa)" (Foerster, 2012c, p. 3).

participated in it, thus fostering the coexistence of different languages in the classroom. The importance—and authority—given to each of these languages, however, has historically been marked by asymmetry.

In the years when the school was administered by the missionary sisters, lay teachers from the continent would gradually be incorporated, in accordance with the growing demand to increase the educational levels offered on the island.[22] In 1956, the public school was renamed Lorenzo Baeza Vega: Alberto Hotus states that that year the use of the *Rapa Nui* language was prohibited on the school grounds (1998, p. 166).[23] The German historian Hermann Fischer (2001), in his post-colonial perspective, emphasizes the colonizing role of education in these years, pointing to the harsh methods applied in the school to discipline the students. While this is in keeping with the oral memory of some of the older people on the island,[24] physical punishment was only one of the strategies employed by the first educators that contributed to the devaluation of the *Rapa Nui* knowledge in the school context and the silencing of the indigenous voice. The pressure exerted by the Spanish language was felt in the school and in formal education, but also in social and family life, and ended up motivating the indigenous community to learn to speak the colonial language.

In 1966, the so-called "Easter Law" (Nº 16,441) was enacted, creating the Department of Easter Island, a department of the Province of Valparaiso, and officially integrating the *Rapa Nui* into national citizenship. This began the establishment of public services on the island, which involved the arrival of a large number of mainland Chileans on service commissions and the progressive increase in the presence of Spanish speakers. This gave rise to an expansion of the process of mixing that started in the late nineteenth century,[25] a process that had a significant impact on the transmission of language and cultural knowledge in families.

The imposition of Spanish at the expense of the native language complicated not only the construction of student learning in the school, but also covered a broader sphere. For instance, it influenced the access of older generations to quality attention

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[22] In 1948, the public school offered courses up to fifth grade. Twenty years later it would reach eighth grade, with the primary and secondary level being completed in 1989 with respect to the Chilean education system in force until then. This school was the only one on the island until 2003.

[23] Speaking in their native language was later forbidden for the *Rapa Nui* in "public events" by local authorities in 1982, in particular, Governor Ariel Gonzalez Cornejos. See Hotus (1987, p. 19; 1998, p. 171). The social penalization of the native language—if not applied by law—was undoubtedly perceived as such by some *Rapa Nui*. See also Delsing (2009, p. 183).

[24] See, for example, Fischer (2001, pp. 215–216) and Zurob (2009, pp. 99–105). However, in Foerster's work, "none of this appears in the memory of these nuns, perhaps because of the naturalization of the pedagogies of the body and because of the physical punishments common until the 1960s in many educational establishments" (2012c, pp. 3–4).

[25] In 1934, Israel Drapkin gathered from his research that 159 of the 456 *Rapa Nui* who inhabited the island at that time could be considered "pure natives"; while the rest were mixed with American, British, Chilean, Chinese, French, German, Italian, Tahitian, or Tuamotu Islanders (Drapkin, 1935). The former number decreased significantly from the mid-twentieth century, dropping to fewer than 60 people of exclusively *Rapa Nui* descent in the 1970s, according to McCall (1986).

in the different public services that arrived on Easter Island in 1966. Communicating efficiently in Spanish with health, education and Land Office agents became more important during these decades, so Spanish became an indispensable tool to participate in the civic, social, and labor life of Haŋa Roa.

On the other hand, the acquisition of civil rights gave the *Rapa Nui* the freedom to move both on and off the island, which intensified the process of diaspora initiated by the islanders in previous decades[26] (Muñoz, 2007). Thus, the need to learn Spanish was experienced by *Rapa Nui* men and women who remained on the island, as well as those who traveled to the mainland to study or work. For the adult generations of that time—now over 60 years of age—speaking their language was a communicational obstacle. Undoubtedly, these generations were marked by discrimination,[27] an experience that encouraged parents to promote speaking Spanish among their children. Although there are fewer of them today, it is still possible to come across the latent discourse of the *Rapa Nui* who saw their expression forcibly displaced during a sad historical period of inequality and discrimination.

From an educational perspective, the curriculum developed on the continent for the island's schools—in Spanish—is derived from particular assumptions about the nature of reality. Inasmuch as that reality has a predominant place in school programs, it exercises a "symbolic violence" over unrepresented realities, "which implies a power that manages to impose meanings … as legitimate, concealing the power relations to which it owes its own strength" (Bourdieu & Passeron, 1970, p. 21). This violence goes beyond the school environment, insofar as the knowledge that the school sanctions is supposed to be real or true. Nevertheless, there is a gradual devaluation of the native language in the community, which leads to parents encouraging their children to speak a Spanish that is tarnished by social imposition; raising a generation of young people who do not have complete command of the colonial language or full ability to use, understand, and produce the *Rapa Nui* language. The imposition of Spanish through different colonial agents has driven the growth of an intergenerational gap that progressively restricts spaces for interaction in *Rapa Nui* language between the elderly and adults, on the one hand, and children and young people, on the other.

In the historical sense, the school appears as the "guilty party" in the process of linguistic displacement insofar as it reinforced the process of colonization that began in 1888 and accelerated it in the 1960s. Although the school has positioned itself as the dominant influence, it has also been the primary space for the revitalization of the native language. In the last 60 years, *Rapa Nui* people have increasingly engaged in formal education and have established partnerships with non-*Rapa Nui* people who have shown interest in teaching indigenous knowledge. This has given rise to the

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[26] Previous movements of the diaspora include the mass exodus to Tahiti and Mangareva in 1871 and, later, the clandestine escape of at least eight ships between 1940 and 1950, due to the restrictions on movement imposed by the Company and the Chilean Navy (Muñoz, 2007, pp. 39–41).

[27] See for example Muñoz (2007, pp. 275–294) and Moreno Pakarati and Zurob (2013, pp. 27–47).

generation of a dialogue that allows progress to be made towards the development of formal education that is culturally sensitive and which is significant to the reality of the *Rapa Nui* people.

9.4 Opening up Spaces in Formal Education for Revitalization of the *Rapa Nui* Language

In response to longstanding local demands,[28] in November 1975, the Ministry of Public Education issued Decree 991, which authorized, as of the 1976 school year, the implementation of a Special Curriculum and Learning about Working Life in the district of the Sub-delegation of Easter Island, in Region V of Valparaíso.[29] From that year onwards, the *Rapa Nui* language subject was included from the first to the sixth grade. In this context, a cooperation agreement was signed between Universidad Católica de Valparaíso and the Summer Institute of Linguistics (now SIL International) with the broad purpose of studying the *Rapa Nui* language and developing educational material for the school.[30] *Rapa Nui* people, mostly women, participated in a writers' workshop[31] run by SIL linguists who visited the island (Robert Weber & Nancy Thiesen de Weber).

In 1976, when *Rapa Nui* language classes became part of the curriculum, 77% of the students in the school were native speakers of the indigenous language. Thirteen years later, the number of native *Rapa Nui* language students had dropped sharply to 25% (Thiesen & Weber, 1998, in Makihara, 2005, p. 728). "At that time, few people realised that Rapa Nui students were not learning because they did not understand Spanish, and this situation was not rectified until the vernacular language started to be introduced at the island's only school" (Haoa, 2013, p. 3). These "few people" were able to raise their voice, and when the decline of *Rapa Nui* speakers in the school became evident in the 1980s, teachers and staff developed an unwritten curriculum on indigenous education for the island's students.

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[28] Ten years earlier, the magazine VEA published: "The Awakening of the Moai: Easter Wishes. In a memo written by the Easter Islanders and to be read by the President this week, the islanders summarize their aspirations… They also want a Vocational School to be created… Between sixty and a hundred people, adults and minors, emigrate annually" (1965, February 4, in Foerster 2012b, p. 79). See also Hotus (1998).

[29] Decree Nº 991/1975, Ministry of Public Education: "This consisted of a variable plan for the seventh and eighth grades, in which students had to choose between electricity, woodwork, or woolwork, dance and folklore, or textile printing, and a Differentiated Curriculum for the first and second years of secondary education, which had basically two areas, Hospitality and Tourism, and Handicrafts. The subject of *Rapa Nui* language was added that year as a compulsory subject" (Arredondo, 2013, pp. 126–127). It was later revoked by Decree No. 40/1984.

[30] The research project and collaborative work with the *Rapa Nui* people continues to this day (Robert Weber & Nancy Thiesen de Weber, 2013, personal communication).

[31] Indigenous authors write their stories in Spanish and in *Rapa Nui*; some of them would later be published by the publisher Andrés Bello under the title 'A'amu o Rapa Nui' (Writers' workshop, 1986).

Rapa Nui and non-*Rapa Nui* people involved in formal education began teaching the native language in the spaces available. "In 1982 teachers started using texts for teaching Rapa Nui as a second language" (Delsing, 2009, p. 328) and subjects such as art, music, and physical education started being taught from a local perspective. This could be said to be part of a sort of renaissance of local knowledge, partly driven by the return of young professionals trained on the continent (mostly as teachers) and their association with older people in the community, starting in the 1960s. In later decades, some *Rapa Nui* scholars carried out highly influential research on the island, such as the thesis of teacher Rodrigo Paoa, "La Recreación en Isla de Pascua" (Recreation on Easter Island).[32] For his part, teacher trainer Alfonso Rapu participated in the organization of a scout brigade, adult literacy courses in the afternoons, and, with Luis Pate Paoa,[33] formed a dance group called *Hotu Matu'a Ava Rei Pua* (Arredondo, 2013, p. 122).

These and other people who have sought to make space for the *Rapa Nui* language and knowledge in the school have helped to establish concern among the community about the displacement of their native language.[34] Their experience is framed by an understanding of language that exceeds its communicational functionality and appeals to its symbolic capacity to create particular senses of reality (D'Andrade, 1984). In this vein, it is suggested that the loss of language or '*vanāŋa Rapa Nui*'

> is a social, cultural, and even spiritual problem. This is because our own Polynesian language, Rapa Nui, is devalued when it has no functionality in its community's socio-economic, cultural, and spiritual development, when state institutions work only in Spanish, when most tourism is currently Spanish-based, and when the influx of Spanish speakers has grown considerably over recent decades - all of these factors have led to socio-cultural changes in the Rapa Nui community. Families have sought to send their children down different roads to their own in the hope of improving their quality of life, without their mother tongue, and that has to do with the soul, with feelings, with the relationships between people and with the ecosystem. (Haoa, 2013, pp. 1–2)

The growing awareness of the risk of language extinction and the threats to which other Polynesian cultures were exposed also played a part in this story. In 1990, Virginia Haoa and Pedro Edmunds participated in the second World Indigenous

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[32] The author analyzes the practice of sports on Easter Island up to the time of his research, including religious rites prior to the arrival of missionaries, as well as traditional games and sports (Paoa, 1983). Three years later, Paoa became one of the organizers of the Tapati Rapa Nui, "the annual cultural festival of Easter Island" (Bendrups, 2008, p. 15), and he was also one of the founding members of the Cultural Protection Corporation Mata Nui a' Hotu a' Matu'a o Kahu Kahu o Hera (see Delsing 2009, p. 312).

[33] His name is alternatively recorded as Luis Avaka Paoa (1926–2008), known on the island as Papa Kiko. His work had a great impact on the development of *Rapa Nui* culture in modern times (especially in the oral arts: storytelling, song, dance, among others), and is remembered for its immense contribution to the development of the local knowledge tradition. For example, see McCall and Bendrups (2008).

[34] There are several works that go deeper into the linguistic issue, as well as systematic efforts to diagnose the current proficiency of the *Rapa Nui* language among children. We recommend reading Thiesen and Weber (1998), Makihara (1999, 2005), and the work of the Language Academy (Ūmaŋa Hatu Re'o Rapa Nui, 2011).

Peoples Conference on Education (WIPCE)[35] conference held in Aotearoa, New Zealand, which brings together the world's indigenous peoples around the theme of education. The implementation of *Kōhanga Reo* and *Kura Kaupapa*[36] and the ongoing *Maori* renaissance (Durie, 2012) deeply impressed the *Rapa Nui* delegation that participated in the event. They were able to observe the progress in the regeneration of the indigenous language according to the methods and contents of the *Maori* knowledge tradition, making this experience a relevant precedent for the creation of a *Rapa Nui* education program.

The following year, the Department of Language and Culture was created at the Lorenzo Baeza Vega School, formed by *Rapa Nui* teachers from the school. They begin to create strategies to raise the awareness of the community—particularly parents—about the delicate situation of the *Rapa Nui* language. One of these strategies was the organization of *Te Mahana o te Re'o Rapa Nui* (Rapa Nui Language Day), a day dedicated to the celebration of the local voice. The first *Mahana o te Re'o* was held on November 19, 1991 (Arredondo, 2013, p 133) and it has been held annually ever since.

After that, the first initiatives were included in Chilean legislation for the creation of intercultural education programs. The Indigenous Act of 1993 and Decree N° 40/1996 of the Ministry of Education (MINEDUC) authorizing the creation of Own Plans and Programs (PPP, by the Spanish acronym) created new spaces for Intercultural Bilingual Education (EIB[37]) for indigenous students in the national context. It was in this scenario that the proposal for the Immersion Program (PI, by the Spanish acronym), drafted in 1997 by Virginia Haoa after an internship[38] in Germany, emerged. Three more years passed before MINEDUC approved the application of the PI in the Lorenzo Baeza Vega School as a pilot experience. The proposal involved teaching of all learning areas in *Rapa Nui* language for students from first to fourth grade, with the aim of the children building meaningful learning in the vernacular language, considering that EIB had not yet established guidelines capable of reviving native languages in the school context. The immersion approach adopted under the proposal considered the need to immerse children in the *Rapa Nui* language for the meaningful transmission of the official knowledge provided by the national curricular framework, complemented with content specific to the island's culture.

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[35] World Indigenous Peoples' Conference on Education (WIPCE), May 1990, Turangawaewae Marae in Ngaruawahia. Hamilton, Aotearoa, New Zealand.

[36] Corresponds to *Maori* language immersion (kura) schools for pre-school and primary education, respectively; based on customs and traditions relevant to *Maori* philosophy, and its theoretical expression, the Kaupapa Māori. The *Maori* "language nests" (Te Kōhanga Reo) implement a series of education interventions undertaken by *Maori* people since the mid-1970s. In brief, it was followed by the establishment of primary immersion schools in the early 1980s (Kura Kaupapa), Kura Tuarua (secondary immersion schools), and Whare Wanānga (*Maori* education options at the tertiary level) (G. H. Smith, 2003).

[37] Title IV, Paragraph 1, Articles 28 to 31. One of the main governmental efforts in this regard, the Origins Program, was not covered on Easter Island.

[38] Internship and Scholarship Program Abroad (PBE, by the Spanish acronym) implemented by MINEDUC in 1996.

The PI was approved by MINEDUC in 2000 for first grade, with the intention of gradually increasing the level from first grade to fourth grade. Work was initially done with preschool children, who then started the first grade of elementary school with immersion. In the first cycle (2000–2003) the program showed significant progress in teaching the language to the students, which motivated more parents to enroll their children in the PI, and it has gradually grown in strength since then. In April 2004, via Exempt Decree Nº 235 of the Education Ministry, the Lorenzo Baeza Vega School was officially declared bilingual and it was approved to teach *Rapa Nui* language from first to eighth grade, in accordance with special curricula.

In the last 10 years, the team of teachers and technical staff at the school—now a municipal-run school—has developed its own study programs for two parallel courses: interculturality and immersion. The immersion program works according to the same premises and teaches contents in *Rapa Nui* language from preschool to fourth grade,[39] while the parallel course involves bilingual teaching (in Spanish and *Rapa Nui*) according to EIB policies. In addition, the *Rapa Nui* language continues to be taught as a compulsory subject at elementary level up to seventh grade, in accordance with the new ministerial guidelines.

The development of these indigenous education initiatives has not been linear, and those who have worked on the development of a *Rapa Nui* curriculum have required the support of parents and other people in the community. Initially, parents were required to sign a document to support their decision to enroll students in the pilot immersion program and the contents of the program were worked on with people who were familiar with the *Rapa Nui* language and tradition, generally members of the older generations of the community. In addition, negotiations with national authorities, particularly MINEDUC through the Intercultural Bilingual Education Program (PEIB) and National Indigenous Development Corporation (CONADI), have been crucial for the funding of *Rapa Nui* education programs and for their authorization and legitimization at the local and national level. This process has recently been coordinated with the implementation of the indigenous language sector (SLI, by the Spanish acronym) in the country, with the official validation of the curricula for the *Rapa Nui, Aymara, Quechua*, and *Mapuche* people, from first to fourth grade.[40] In 2011 a cooperation agreement was also signed between MINEDUC and the Municipality of Easter Island for the financing of the PI until 2014.

These achievements are the result of a long struggle on the part of school staff and *Rapa Nui* mothers, fathers, teachers, and language teachers, who have worked to

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[39] These programs have been financed by CONADI at the preschool level and MINEDUC at the elementary level.

[40] Corresponds to Exempt Decree on Education Nº 1619/2010; Nº 41/2011; Nº 1479/2012, and Nº 1623/2013 respectively. Part of the ministerial approval process has been the validation of curricula at the local level. In view of the incomplete implementation of ILO Convention 169 with regard to the consultation of indigenous peoples, the National Education Council approves the plans and programmes, but reminds the Ministry of Education "that International Labour Organisation Convention Nº 169, concerning Indigenous and Tribal Peoples in Independent Countries, must be implemented with regard to the consultation of approved curricula prior to their implementation" (CNED, Agreement 021/2013).

strengthen intercultural education. Currently, both the immersion program and the EIB program being conducted at the Lorenzo Baeza Vega School are recognized as a growing initiative that—not without its difficulties—has positioned itself both on and outside the island as an official learning alternative with cultural relevance. The experience of those involved in this story has not had great visibility in studies on interculturality in Chile and, therefore, our interest arises from the need to promote informed discussion that contributes to the generation of cross-cutting agreements in the field of education and indigenous people. In the next section, we examine some of the difficulties that currently pose challenges for the continuation of the immersion program and how these challenges are connected (or not) with the country's education policies.

9.5 Community Appreciation and Validation: Effects of Curriculum Standardization and Other Challenges for the *Rapa Nui* Language Immersion Program

Easter Island currently has three schools and all of them offer full elementary and secondary education. This has made the local offering of educational institutions more complex, in accordance with the educational policies implemented in Chile since 1980 onwards. In this new scenario, the municipal school has been the only one to carry out the immersion strategy, both at the local and national level[41] in the last 14 years. The spaces opened up in public policies were eagerly appropriated by professionals at the Lorenzo Baeza Vega school when they offered a valuable opportunity to integrate *Rapa Nui* language and knowledge into the school curriculum. As an institutional policy, EIB, has been an ally in the creation of a culturally sensitive curriculum, particularly after the approval of the SLI through Decree Law 280 of 2009. This gives official status to the development of appropriate curricula in indigenous contexts, structured around two central pillars: "Orality and Written Communication, both oriented towards the teaching, promotion, and appreciation of indigenous languages" (MINEDUC, 2009, p. 122).

While these advances are appreciated in the *Rapa Nui* context, one of the great difficulties that both EIB and the immersion program have faced is the perception of the local community and the persistent questioning about their interest and relevance for achieving better results on the official instruments that measure the quality of the education provided at school. The National Education Quality Measurement System (Simce, by the Spanish acronym), introduced in the late 1980s as one of the pillars of the neoliberal education model[42] (Castro-Paredes, 2012), has reduced the

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[41] We refer to the context of teaching native languages in the country, since the immersion strategy is also applied in Chile for teaching foreign languages in private schools (such as English, French, and German).

[42] This is consistent with the policies designed by the so-called Chicago Boys, which were applied in different countries through neoliberal experiments in the 1980s and 1990s, such as Aotearoa in New

capacity to provide indigenous education, as it results in the invisibilization at national level of culture and values rooted in local contexts. The relevance of the Simce has grown in recent decades, being used by successive Chilean governments after the return to democracy to define "quality education" through extensive media coverage (Meckes & Carrasco, 2010). The publication of results and school classifications according to rankings means that parents rationally choose the best school for their children in terms of quality. This rationale and its corresponding definition of quality does not consider the objectives of a *Rapa Nui* education program and also relegates the importance of the area of Orality proposed for the SLI. In this vein, although the Simce assesses curricular goals that are not related to intercultural education, the increasing pressure on schools to improve their results has significantly affected the possibilities of growth of EIB and the PI in the case of the *Rapa Nui* language.

The selection of content and skills assessed by the Simce involves evaluation of certain areas of learning over others, through what is tested and what is left out. Currently, the subjects assessed are: Language and Communication (reading and writing comprehension in Spanish); Mathematics; Natural Sciences; History, Geography and Social Sciences; English; and Physical Education. In a short analysis, it could be said that the application of national standards does not provide encouragement for diversity and creativity, paying little attention to each student's particular learning process and the knowledge of his or her native language. By comparing two different learners on the same scale, one wins and the other loses.

The same is true for two competing languages, which implies that the apparent neutrality of Simce inspires deficit discourses (Solorzano & Yosso, 2001) of the work of teachers on Easter Island. Issues such as identity and cultural belonging are not part of the Simce equation[43]; although we believe that they are realities with profound consequences on students' performance. In this respect, the Simce is not assessing culturally sensitive education at the school level, so the overvaluation given to this type of diagnosis at the local and national level acts against the visibilization and development of intercultural education.

Over the past six years, the PI has been persistently altered with Spanish hours that are focused on improving school outcomes. The implementation of the Shared Support Plan (PAC)[44] after 2011 meant applying teaching materials in Spanish, and in 2012 the immersion cycle was interrupted by the incorporation of the Simce

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Zealand and Chile. From the policies applied, it is clear that: "among these are the assumptions that education should mainly support individualistic and nationalistic competition in the global economy and that an educational competition of winners and losers is in the best interest of public life in a diverse society" (Gruenewald, 2003, p. 3).

[43] It could be argued that the inclusion of other quality indicators (OICs, by the Spanish acronym) in the variables considered in the management of establishments (Article 17, Law N° 20,529) introduces differences to the equation. However, their impact on the average score of each school is still marginal and they do not explicitly consider cultural diversity.

[44] The PAC focuses on five areas: use of pedagogical resources aligned to the curriculum, monitoring of progress in learning, school climate and culture, use of time in the classroom, and strengthening of teaching practices. For this purpose, the ministry provides pedagogical tools, teaching methodologies and technical advice, all in Spanish.

test for second grade, which introduced important changes to the progression of learning expected for the PI. In this regard, the standardization of practices and assessments does not consider the possibility of developing alternative learning paths towards academic "success". Nevertheless, it is necessary to rethink the way in which education is being observed and measured, since the standards imposed contradict the objectives of intercultural education; which allows for the appreciation of differences and not based on homogenization.

In the case of the Lorenzo Baeza Vega School, the development of measurement instruments in accordance with the objectives of EIB and the *Rapa Nui* immersion program has been a constant concern of the team of professionals.[45] Coordinated by the technical-pedagogical units of the school, and in collaboration with the *Rapa Nui* Language Academy and the SIL linguists, work has been done on the assessment of linguistic competencies for the immersion courses and of the contents of *Rapa Nui* language and culture in the Spanish-speaking courses.[46] This type of assessment is handled internally and has little visibility in public. However, the experience of the educators who have implemented the PI in the municipal school on Easter Island indicates that children from homes where *Rapa Nui* was spoken and those who were not as close to the language in their daily lives began to assimilate and speak the language in the classroom. After the first cycle, it was possible to hear the PI students express themselves fluently in *Rapa Nui*, which showed that the potential existed and that native language teaching produced positive results, especially in immersion courses. By 2012, the expected learning of *Rapa Nui* language comprehension and production skills among first- to third-grade students showed sustained progress, while in fourth grade the proportion of students with adequate management of these skills remained the same. This would be associated with the process of transition to the fifth grade, where there is a significant reduction[47] in the number of hours spent in *Rapa Nui* immersion courses (Haoa et al., 2012, p. 51).

In a broad sense, the present challenges of the PI are related to the need to expand the immersion process, which—we should remember—is implemented up to fourth grade in a school on the island. This primarily implies gradually increasing the

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[45] This information and that discussed below comes from the "Informe de Cumplimiento e Identificación de Desafíos Plan Estratégico de la Educación Municipal de Isla de Pascua 2009–2018 (Compliance Report and Identification of Challenges of the Strategic Plan for the Municipal Education of Easter Island 2009–2018) (DAEM, 2013, p. 8), from the final report of the project " La lengua y la cultura rapanui se revitalizan" (Rapa Nui language and culture are revitalized), prepared by the UTP Immersion Program and the Rapa Nui Language and Culture Department (2012), and from the direct experience of Virginia Haoa.

[46] The Spanish-speaking course differs from the immersion course at the school up to fourth grade, notwithstanding the fact that it includes an important intercultural component, in terms of the PEIB, focused on "improving learning achievements, based on the strengthening of the ethnic identity of children in educational establishments of Elementary Education located in contexts of cultural and linguistic diversity" (2005, p. 5).

[47] For the first and second grade, the PI proposes 100% teaching hours in *Rapa Nui*; in third grade, 70% in *Rapa Nui* and 30% in Spanish; and in fourth grade, the percentage of hours in Spanish increases to 50%. The preschool level is initially bilingual with a progressive increase towards 100% immersion in *Rapa Nui* in NT2 (Haoa et al., 2012, pp. 51–52).

educational levels at which it is taught, but also connecting the process of the students with their family and social environment. This reveals a series of specific needs for the development of the programs implemented by the Lorenzo Baeza Vega School, some of which go beyond the actions of the school and result in the urgency of connecting intercultural education with other social spaces.

Firstly, the lack of trained human resources fluent in *vanāŋa Rapa Nui* who can carry out teaching at higher levels, as well as adequate support for educators who have themselves learned *Rapa Nui* as a second language is one of the obstacles for expanding it to higher courses at the school. This is also a challenge for the continuation of the PI in the future. This difficulty is also combined with the demand for qualified teachers in higher education institutions in continental Chile. The recent validation of the figure of traditional educators as the heirs to the cultural advisors of EIB offers a solution, but it does not resolve the need to train professionals who are capable of sustaining a continuous program of intercultural education according to local particularities. Nor does it address the distribution of power within the classroom, since in the ministerial proposal for pedagogical pairs, "indigenous educators are tutored by official teachers without affecting all school life" (Williamson, 2012, p. 145).

Based on the experience in New Zealand, Bishop and Berryman (2010) argue that the most urgent problem in education at present is the interaction between the increasingly diverse student population, on the one hand, and the lack of diversity among teachers, on the other. This problem adds to a persistent pattern of educational disparities affecting students of color, students in poverty, students with different abilities, and new immigrants, while the teaching profession continues to demonstrate discursive positions and pedagogical practices that belong to an era of monoculturalism.

The authors acknowledge that the problem associated with homogeneous teacher training is that the range of experience and cultural understandings with which they deal is limited, so they may not be aware of the "funds of knowledge" which children from different backgrounds can call upon in the classroom (Bishop & Berryman, 2010, pp. 173–174). Along these lines, the case of Aotearoa New Zealand illustrates the parallel importance of implementing teacher training and continuous professional development programs that promote the creation of a culturally sensitive context for school learning.[48]

The *Maori* experience is key to the case we are discussing, not only because it has demonstrated important advances in the regeneration of their native language and knowledge tradition, but also because it shares a common Polynesian cultural basis with the *Rapa Nui* people. In their struggle to reverse the decline of school-age *Maori* speakers,[49] they have considered it necessary to create spaces of total immersion; that

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[48] One such program is Te Kotahitanga, a research and professional development project funded by the Ministry of Education, which supports teachers in improving the learning and performance of *Maori* students. It responds to the problem of educational disparities faced by *Maori* students, which remains one of the most pressing educational issues in New Zealand (Bishop et al., 2009).

[49] In 1913 over 90% of *Maori* schoolchildren could speak the language, but by 1975 this figure had fallen to less than 5% (Calman, 2012).

is, elementary schools (*kura*) and language nests (*kōhanga reo*) completely devoted to teaching in the native language. In the case of Easter Island, another limitation of the PI is that, given the public administration of the school, the immersion course shares physical space with the Spanish-speaking courses, thus causing a discontinuity in the immersion process during breaks and extracurricular activities. For this reason, the need to create an independent space to encourage interaction in the *Rapa Nui* language, both among the children who are taught in that language and between the students and the school's teaching or administrative staff, has been mentioned.

Another challenge for *Rapa Nui* education programs that has been addressed in the *Maori* context is the importance of connecting indigenous education at all levels of formal education. The progressive integration of *Maori* language and knowledge (*or mātauranga*) into the New Zealand education system over the past four decades has been successful in establishing itself at the preschool, elementary, secondary, and tertiary levels of education. In the case of preschool education, for example, a curriculum was developed—*te whāriki*—based on *Maori* philosophies. This curriculum was introduced in 1996 and it is implemented in all preschools nationwide. Elementary education, on the other hand, has a national curriculum consisting of two different versions: a curriculum in English (The New Zealand Curriculum), and one in *Maori*, *Te Mārautanga or Aotearoa*, implemented since 2008. The latter is not a translation of the English language curriculum, but covers different learning objectives and content and is, in turn, assessed with specific standards. These advances have been supported by the tertiary and academic sectors. From these spaces of knowledge production, the development of research capable of focusing on the needs and aspirations of the *Maori* people has been promoted, articulated according to the theory of transformative practice, *Kaupapa Māori* (Smith, 1997).

Kaupapa Māori is a critical theoretical trend that gained momentum in the 1980s as political awareness among *Maori* people. It promotes the revitalization of their cultural aspirations, preferences, and practices, challenging the hegemony of a paradigm that has allowed research to be beneficial primarily to the researcher (Bishop, 1996; Smith, 1999). This process is central to understanding the positive development of *Maori* education, as it provides a framework for initiatives implemented in the field of education, which is, in turn, grounded in their own cultural tradition.

From this perspective, it could be said that *Maori* education initiatives have a coherence and connectivity between educational levels that is not seen in the implementation of EIB in our country, where it is characterized by the marginal, ambiguous and even contradictory place it occupies with respect to national policies in matters of education. This ambiguity can also be seen in the instability of funding for the program, which is provided through grants, projects, and other forms of support from CONADI and MINEDUC, which must be obtained year after year, with the consequent attrition on the school's team of professionals. In addition, the nature of salaries that encourage individual work, rather than collaboration between teachers, school staff, and parents, has implications that limit the participation that a program

of this type requires. This also makes it difficult to set long-term goals and strengthen the school team.

In short, the expansion of intercultural education programs on Easter Island requires sustained support over time. Until now, the instability of financial and political support has hindered the creation of curricula that are appropriate to the island's context and their expansion to higher grades. Similarly, although there have been important advances in the production of school textbooks in most areas of learning, this work requires continuity that allows such texts to be updated and new methodologies and content that are appropriate to the sociolinguistic reality of the students to be introduced.

However, as Bernard Spolsky states regarding the *Maori* case, language does not regenerate itself solely through formal education contexts (2003). Community and family context, as well as intergenerational language use, are identified as key factors for language regeneration (Hōhepa et al., 2006). For this reason, the need to create *Rapa Nui* language workshops with parents has been discussed, which would enable continuity in using the language in their homes, allowing them to consolidate the achievements made at school. Likewise, the inclusion of culturally sensitive criteria in adult education is proposed as an essential measure to generate community contexts that allow progress in the revitalization of *Rapa Nui* knowledge and language. Indeed, the importance of continuity between the school and the home in the learning process has been highlighted by public policies and academic research (Hōhepa et al., 2006; Macfarlane et al., 2008). However, strategies to achieve this must be developed in relation to specific places, their human groups, and cultural traditions (Cajete, 2006; Yazzie-Mintz, 2011). In this sense, the satisfaction of the specific needs of the IP must be complemented with a broad and long-term vision that allows intercultural education to assume new challenges in the revitalization of the knowledge and language of each native people.

9.6 Conclusions

If the school was the main device of colonization 30 years ago—in Foucault's (1979) terms—it is now responsible for the invalidation of that process, understood as a way of assuming its historical responsibility and "reversing the linguistic displacement," as Fishman (2001) states. In a broad sense, formal education is blamed for the marginalization of the *Rapa Nui* language and for encouraging families to reproduce the colonial language in their own spaces of interaction. As the number of people who predominantly speak Spanish in their homes increases, so does the pressure on schools to contribute to the regeneration of the *Rapa Nui* language through children who increasingly come from Spanish-speaking families. This paradox faced by educators on Easter Island can only be resolved by adopting an historical perspective, which highlights that the persistent silence of the *Rapa Nui* language and culture in formal education is inseparable from the impacts of a broader process of colonization.

It is for this reason that we began this chapter by celebrating the vision of María Aŋata, in a context in which the *Rapa Nui* voice is heard from the space of resistance, a space persistently silenced and marginalized by the official accounts of the history of the *Rapa Nui* people. In the educational sphere, the colonization process has gradually excluded parents and other educators from making decisions about what their children should learn and what is considered educationally successful according to local realities. This leads to incongruities between the objectives developed at the national level and the avenues available to communities to achieve these objectives. The school as a "remotely driven" place (Lingard & Sellar, 2013) and the school as a place for meaningful education in the local context (Cajete, 1994) continually exhibits competing demands.

The advances made in terms of EIB must be reinforced by permanent policies that allow the historical responsibility of formal education in the marginalization of indigenous knowledge to be assumed. This means aiming towards the appreciation of diversity and a decisive move away from policies of homogenization of knowledge and methodologies, allowing coherent educational development for each cultural context. To the extent that the political will understands this as being essential, progress will be made in consolidating and enriching an interculturality that is finally part of the country.

The story we tell here underlines that local agency is the undisputed driving force behind indigenous education programs on Easter Island. The actions of some people in the community who have given value to their ancestral knowledge in the school space put a new spin on the symbolic violence of Bourdieu and Passeron (1970), inasmuch as it is based on their work that the indigenous education initiatives discussed here have been created. In order to achieve that, partnerships with political authorities have been forged and work has been done based on the local appropriation of the proposals created at governmental level, seeking spaces that allow the existence of a real intercultural dialogue that is capable of overcoming the asymmetries of the past.

Positioning and valuing—in both the local and national context—the knowledge of indigenous cultures is one of the greatest challenges, not only for PIs, but for interculturality in general. Encouraging the use of a people's native language is more than merely a right in the field of education; it is a need for recognition of the other with respect for their diversity. These approaches are not new; in a report prepared in 2011 on the situation of native languages in Chile

> It is concluded that the strengthening and promotion of these *languages is not only a task for the educational field, but also* requires the creation of a broad policy of recognition and promotion that is aimed at standardizing them and facilitating their learning in community, social, and institutional spaces, through which their reproduction and vitalization can be achieved. (Special Commission on Indigenous Peoples, 2011)

Up until now, these demands have not been accepted by the national authorities, so the challenge now is to position indigenous languages in a comprehensive manner, so that the different social strata that interact in the daily life of each particular context can be part of the responsibility for their preservation. In this scenario, education

plays a fundamental role, but whoever speaks the language also needs to have a space in society in which to revive it.

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Part III
Teaching Processes in Intercultural Spaces: Communities, Learning, and Cultures

Chapter 10
Incorporating Indigenous Mathematical Knowledge into the Education Systems of Colombia and Chile (1990–2013)

Pilar Peña-Rincón, Hilbert Blanco-Álvarez, and Armando Aroca

10.1 Introduction

The aim of this text is to present our view of the current panorama of teaching mathematical knowledge in the education systems in Colombia and Chile between 1990 and 2013. This is the main theme of the text in four major sections. To write this, we have used references to the social and cultural aspects of mathematical education and intercultural education.

In Sect. 10.2, we theoretically address the advances that have been made in Latin America in recognizing the knowledge of indigenous peoples and, in particular, indigenous mathematical knowledge, which has been delegitimized and made invisible through processes of territorial and cultural colonization. Later, we discuss two philosophical positions on the nature of mathematics: the Platonic and the sociocultural, showing the differences between them and the advantages of a change towards a sociocultural view of mathematics. We continue by presenting Ethnomathematics as a field of research in the sociocultural perspective of mathematics that is interested in studying the processes of generation, dissemination, and socialization of mathematics practiced by different social groups (indigenous peoples, Afro-descendants, professional bodies, older adults, illiterates, etc.). And we conclude by pointing to the

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importance and the need to bring indigenous mathematical knowledge into the classroom within the framework of a process of revival, systematization, and appreciation of their knowledge.

In Sect. 10.3, we set out the great achievements that have been made in legislative and educational matters, both in Colombia and Chile. We start with Convention 169 of the International Labour Organisation (ILO) in 1989 and continue to the creation and implementation of the two initiatives that address the education of indigenous peoples in Colombia and Chile: Ethnoeducation in Colombia in 1994 and the Intercultural Bilingual Education Program in Chile in 1996. In particular, we carry out a comparative analysis of the legal frameworks of each country and their legal possibilities with respect to the incorporation of the mathematical knowledge of indigenous peoples into schools.

In Sect. 10.4, we present a characterization of the educational institutions where processes of Ethnoeducation or Intercultural Bilingual Education are conducted. This was carried out with a focus on the indigenous people and the areas in which these educational institutions are inserted, the origin of the initiatives that they carry out, the knowledge through which indigenous mathematical knowledge can be incorporated or the subjects in which it is addressed, and the level of training of the teachers. That is, in this section we illustrate how the process of putting into practice the theoretical and legal aspects outlined in the Sects. 10.2 and 10.3 has progressed, with all the difficulties and successes that have been experienced.

In Sect. 10.5, we summarize the achievements and challenges that we outline in the various sections. The main achievement is that intercultural education projects are being developed in both countries and there have been some experiences in incorporating indigenous mathematical knowledge into schools. Among the major challenges, in Chile we emphasize the need to give constitutional recognition to indigenous peoples, while in both countries it is necessary to develop or strengthen the incorporation of mathematical knowledge into schools and into teacher training.

10.2 Intercultural Education and Indigenous Mathematical Knowledge

10.2.1 Education for Sociocultural Diversity: Recognizing Own Knowledge

Intercultural education projects in Latin America have emerged as a result of the demands of indigenous peoples to exercise their right to develop their own identity, language, and culture, and to have an education in accordance with these aspects, as opposed to educational projects developed within a framework of inter-ethnic relationships of domination and submission characterized by authoritarianism, denial of the other, imposition, and dispossession by force, and based on the ethnocentrism of the self-appointed group as a civilizer (Cañulef et al., 2002).

The process of indigenous mobilization in Latin America (Bengoa, 2009) has shown the failure of attempts to standardize knowledge on the basis of the rationality of Western thought as a source with universal validity, and it has shown the need to recognize and value the plurality of rationalities, languages, and ways of life. This invalidates the absolute points of reference in education and confirms the relevance of educational projects based on sociocultural diversity.

Thus, intercultural education projects, while seeking to meet the aspirations of indigenous peoples, are also intended to contribute to the development of societies that value their sociocultural diversity by fostering intercultural relationships between the various ethnicities and nationalities on the basis of mutual respect, dialogue, and reciprocity.

Within this context, one might ask about the place of mathematics in intercultural education projects. Is it appropriate to incorporate mathematics—a scientific discipline fundamentally spread by the West—into intercultural education projects whose main focus is on peoples who have other worldviews? Is mathematics a universal discipline? Or is the idea of universal mathematics part of the ideological construction of the West that disregards the contributions of certain people to the development of mathematics as a discipline?

Looking at the conceptions of mathematics from the perspective of mathematics education can help us outline an answer to these questions.

10.2.2 The Platonic Perspective

Until very recently, the most widespread perspective in mathematical education was the Platonic perspective. This is the belief that mathematics existed prior to human beings, and that the role of the latter would be to discover the pre-existing mathematical notions in the world of ideas. This approach has led us to think that mathematics is unique and universal, and therefore it is natural that the same mathematical contents and procedures are spread and studied all over the world. From this point of view, the differences in mathematical expression in sociocultural groups are due to the fact that some human groups discover certain mathematical notions while other groups discover different ones. Since this view has historically been linked with an evolutionary perspective, it is often thought that more advanced groups would discover more complex or higher mathematics and less advanced groups would discover simpler mathematics.

This perspective, disseminated in the Americas through the processes of conquest and colonization (D'Ambrosio, 2001), and later established through schooling, has contributed enormously to delegitimizing the knowledge of indigenous peoples, which is classified as second-class knowledge. This is due to a conflict between Western rationality and indigenous rationalities, with rationality being understood in Habermas' terms as the "way in which subjects capable of language and action make use of knowledge" (1989, p. 24). Unlike Western rationality, indigenous peoples develop a deep and respectful relationship between people, the supernatural world,

and nature, since the human being is perceived as part of nature and not its dominator (Grebe, 1998). Thus, in the Western rationality nature is conceived as something external to the being, as a good, while to indigenous peoples nature is what you belong to: people, spirits, and nature are part of the same world. In this same sense, Williamson states that "for the first conception nature can be used for human benefit, therefore, it can and must be 'civilized' (with the indigenous people who are in it); while, for the second, a relationship must be established that ensures the collective experience, human and natural" (Williamson, 2001, cited in Carihuentru, 2007).

Therefore, indigenous mathematical knowledge has not been recognized because it does not necessarily respond to the axiomatic organization known in Western rationality (definitions, theorems, logical rules). Because of that, the polyvalent logic of the indigenous peoples has not been taken into account because it is perceived as a "heresy" in terms of Aristotelian logic, and the ancestral forms of spatial and cosmogonic location have been ignored because they are not understood based on the Euclidean notion of geometry and space (Páramo, 1989).

10.2.3   The Sociocultural Perspective

Unlike the Platonic perspective, the sociocultural perspective states that mathematics, like the various other types of knowledge, is a sociocultural construct. Therefore, each sociocultural group creates the mathematics it needs according to its worldview and way of life. Ubiratan D'Ambrosio (2001), a Brazilian mathematics educator who has extensively studied the history of mathematics in the Americas, shows us that the discipline identified as mathematics brought to America in the sixteenth century is, in fact, an ethnomathematics that originated in Europe based on traditions from Egypt, Babylon, and Judea, with contributions from the Indian civilization, and that were assimilated and developed by the Greeks, the Arabs, and the Romans. On the other hand, Paulus Gerdes (2012), a Dutch educator and mathematical historian based in Africa, has demonstrated the contribution of African mathematics to the discipline. One remarkable example is the case of Ibn Muncim, a mathematician of Andalusian origin who settled in Marrakesh, who developed the so-called Pascal Triangle (1623–1662) more than four centuries before the French mathematician after whom it was named (Gerdes, 2012), as seen in Fig. 10.1.

The sociocultural perspective has increasingly gained ground in the field of mathematics education and, in addition to that, has paved the way for a specific area of research that addresses the mathematics of sociocultural groups in general and indigenous peoples in particular.

The various existing sociocultural approaches have helped reveal the growing importance of sociocultural aspects in teaching mathematics (Artigue, 2011): The Anthropological Theory of Didactics founded by Chevallard (1992) focused on the institutional aspects involved in teaching mathematics; Social Epistemology (Cantoral & Farfán, 2003) aims to study the social construction of mathematical

Fig. 10.1 Detail of the Ibn Muncim manuscript with the so-called Pascal Triangle, taken from Gerdes (2012, p. 97)

knowledge and seeks to identify the social practices that generate it; Critical Mathematical Education (Valero & Skovsmose, 2012) addresses the moral and political dimension of mathematical education; while Ethnomathematics (D'Ambrosio, 2008) is the specific research field that seeks to study the various ways of explaining the reality of different sociocultural groups (indigenous peoples, professional bodies, social groups, etc.) and the mathematical concepts they use for this purpose.

10.2.4 Ethnomathematics

Since the 1980s, an international research field called Ethnomathematics (in upper case) was created, involving mathematical educators, ethnoeducators, anthropologists, sociologists, members of indigenous peoples and Afro-descendants—among others—who began to think differently about mathematics.

The term ethnomathematics (in lower case) was coined by D'Ambrosio (2008) from three roots: ethno-mathema-tics. *Ethno* refers to the natural, social, cultural, and imaginary environment of the human being; *mathema* refers to explaining, learning, knowing, dealing with; and *tics* refers to modes, styles, arts, and techniques. In other words, to D'Ambrosio (2008, 2009), the concept of ethnomathematics denotes the different techniques, skills, and practices to address, understand, manage, and explain the reality developed by different sociocultural groups (indigenous peoples, professional groups, social groups, etc.). "Among the various techniques, skills and

practices are those that used the processes of counting, measuring, ordering, classification and inference that allowed Pythagoras to identify [in Western rationality] the scientific discipline he called mathematics" (D'Ambrosio, 2009, p. 11). Other sociocultural groups developed and are developing different techniques, skills, and practices to address, understand, manage, and explain reality through their own forms of counting, measuring, ordering, classification, and inferencing, based on different rationalities that may reflect different conceptual positions and cognitive approaches (D'Ambrosio, 2009).

In this respect, there are as many ethnomathematics as there are ways of thinking and speaking (Lizcano, 1993), and they can address both the mathematical aspects of an ethnicity and those of other specific communities, such as the mathematics of workers, rural workers, street children, etc. (Carraher et al., 1995; Soto, 2008; among others). That is, unlike what is usually thought, the term 'ethno' is not only used to refer to ethnic groups or indigenous peoples.

10.2.5 Indigenous Mathematical Knowledge

Recognition of the existence of the mathematical developments of indigenous peoples, while being one of the great contributions of this field of research, is also one of its critical aspects. This recognition is politically relevant in that it helps to validate the rationality of indigenous peoples, demonstrating that indigenous knowledge (both mathematical and non-mathematical) is not second-class knowledge, but responds to other equally valid ways of perceiving and explaining the world.

On the other hand, it is important to incorporate the mathematical knowledge of indigenous peoples into the school based on their own forms of rationality, because they are part of their cultural heritage and indigenous peoples have the right to be educated in their culture: "their histories, knowledge, technologies, values systems, and their social, economic and cultural aspirations" (ILO, 1989, p. 44), and also because they help to promote the mutual appreciation of students from different cultural backgrounds (Gerdes, 2012).

Likewise, both the incorporation of indigenous mathematical knowledge and the contextualization of school mathematics in sociocultural practices are relevant from a pedagogical point of view because, by establishing connections between mathematics addressed in school and mathematical practices present in the sociocultural environment, the possibilities are expanded for children to learn mathematics with meaning.

However, assuming that all indigenous peoples have mathematical developments, it may form part of an ethnocentric perspective if one does not consider the possibility that some peoples do not identify mathematical productions within their culture. The undeniable fact that mathematics has been defined based on Western tradition has epistemological and methodological implications.

In the epistemological field we ask ourselves, what is the mathematical? What the indigenous people themselves define or what is mathematical in the eyes of

the observer? Is it possible that an indigenous people from its own perspective does not identify developments that are mathematical from the point of view of an external observer as mathematics? Or, on the contrary, is it possible that they identify developments as mathematical that would not be classed as such from the Western perspective? In that case, can we say that it has or does not have mathematical knowledge?

Certain methodological obstacles emerge from the above, since defining from which perspective we are looking has implications on what we observe when we propose to identify the mathematical knowledge of a community, even more so if we consider that indigenous knowledge is not usually thematized, but integrated into sociocultural practices. An example of this occurs in the *Tule* community of Antioquia, Colombia:

> Tule mathematics has its foundations in the structure of classification, which is assumed from the cosmological, being the basis of historical, botanical, theological, agricultural and artistic knowledge. The classifiers accompany the discourses, whether linguistic or mathematical, giving precision and foundation to what one wants to communicate. (Ochoa & Peláez, 1995, p. 10)

> In history, mathematics appears as the ability to "see" social, political, economic reality within the Tule cosmology. From this same point, the number expresses time and space with meaning and coherence, accounts for the forms of life of society, and involves normativity based on moral knowledge. In this sense, the number refers to the construction of the family unit, to the political unit, to the personal unit, to wisdom, to music, to history, and especially to intercultural dialogue, where the Western conception of number is complemented by the theoretical and conceptual richness, by including a rigorous observation of nature, of social and political phenomena. (Ochoa & Peláez, 1995, p. 58)

The question then arises, how can we unravel indigenous mathematical knowledge, considering that it is immersed in the social and spiritual activities of communities?

Alan Bishop, Ubiratan D'Ambrosio, and Paulus Gerdes can help us to outline the answers to these questions. The English professor Alan Bishop, motivated by the search for the appropriate way to conceive a mathematical education for everyone in the context of an increasingly complex society and technological environment (1991), states that the mathematical knowledge of a sociocultural group is manifested in pancultural mathematical activities: counting, measuring, designing, locating, playing, and explaining. D'Ambrosio (2008), who has studied mathematical developments in the context of colonization in the Americas, does not refer to the universality of certain mathematical activities, because his conception of mathematical development is interrelated with the environment, given that all cultures develop ways, styles, arts, and techniques to explain, know, and deal with natural, social, cultural, and imaginary environments. Thus, he states that it is important to approach the study of ethnomathematics in a transdisciplinary way, integrating elements of cultural anthropology and the history of mathematics. Gerdes (2012), who has worked on mathematical-cultural reaffirmation in the context of the revitalization of the cultural manifestations suppressed by colonization in Africa, argues that it is important to observe the mathematical knowledge involved in local forms of production. Gerdes

looks into the reasons, that is, in the sense of the presence of a certain mathematical knowledge in local forms of production, given that the mathematical knowledge involved in them "is almost never arbitrary … and [it is] often the only possible solution or the optimal solution to a problem of production" (2012, p. 94).

Returning to the previous epistemological reflection, we again ask ourselves: What is the mathematical in an indigenous context? What is observed from outside or from within the community? If we consider that cultures are dynamic entities that are continuously modified through social interactions with individuals inside and outside the community, we would agree that it is not possible to establish a clear inside and outside. Therefore, what is identified as mathematical in a study will depend on the concept of "the mathematical" that researchers and communities have constructed and on the capacity of both groups to develop the intercultural inter-comprehension of both perspectives (Gasché, 2008). This can be observed in the numerous Latin American studies that seek to revive the mathematical knowledge present in the social practices of indigenous peoples. Sometimes they investigate how school mathematics is manifested in culture, while in others they seek to identify mathematical knowledge from the point of view of the community itself (Aroca, 2009; Chieus, 2009; Díaz et al., 2009; Dos Santos & Donizeti, 2011; Higuera, 2008; Huapaya & Salas, 2008; Lara & Sgreccia, 2010; Micelli & Crespo, 2011, 2012; Sáez-Rodríguez, 2012; Sánchez, 2009; Santos, 2008; Scandiuzzi, 2008, 2010; Scandiuzzi & Coelho, 2008).

Whether we seek to look at how the mathematics disseminated by the West manifests itself in the lives of indigenous peoples or whether we wish to look at the mathematical developments of culture from the perspective of the community, the question of what mathematics is to an indigenous people and how to unravel the mathematical knowledge of communities remains open, as there is no universal answer, because that can be explained by each community. As stated by Gentil Guegia, a member of the indigenous *Nasa* community:

> In this process of formation, we have taken into account the knowledge that exists in our communities, which comes from the earth and is for life, and which we express best when we speak in our own language, Nasayuwe, because it allows us to manifest the vitality of our thinking and worldview … It is from this experience that this book is created, where we show the advances in research carried out with the communities, and which allows us to approach reflections on the way in which we use mathematics in our context. (Parra & Caicedo, 2009, p. 9)

This theoretical reflection allows us to appreciate that, although the epistemological and methodological questions remain open, a first step regarding the incorporation of indigenous mathematical knowledge into the school requires broadening the concept of mathematics. Next, we will examine the spaces provided by the legislation and the intercultural education projects in Colombia and Chile carried out to achieve this.

10.3 Legal and Administrative Institutions That Contextualize the Teaching of Mathematics to Indigenous Peoples

In this section, we describe the legal and curricular advances that the education systems of Colombia and Chile have made in teaching mathematics to indigenous peoples, and we conclude with a comparative analysis of the situation in each country. This analysis is intended to serve as a starting point for enriching and stimulating the teaching of indigenous mathematics within the framework of Ethnoeducation in Colombia and Intercultural Bilingual Education in Chile.

10.3.1 Colombian Legislation Paves the Way for Ethnoeducation

National policies and the Colombian education system have undergone major changes in the last two decades, which have made it possible to think about and develop intercultural education. These changes were strengthened in March 1991, when Law 21 approved the 1989 ILO Convention 169 on indigenous peoples, and continued with the Political Constitution of Colombia (1991), which recognized the country's ethnic diversity: the indigenous, Roma, and Afro-Colombian communities. This ethnic diversity is enshrined in articles 1, 7, and 10, which proclaim Colombia as a democratic, participatory, and pluralist republic that protects the ethnic, cultural, and linguistic diversity of the nation. This change in the political constitution is particularly important, because the ethnic groups with their historical and linguistic particularities were not recognized in Colombian territory in the previous Constitution of 1886.

Later, in 1994, with the enactment of the General Education Act N° 115, regulations were issued on the education offered to all Colombians and on education aimed at ethnic groups, known as ethnoeducation. Ethnoeducation is defined in Article 55 as: education for ethnic groups that are part of the nationality and have their own indigenous culture, language, traditions, and laws, linked to the environment, the production process, and the social and cultural process, respecting their beliefs and traditions (Ministerio de Educación Nacional de Colombia, 1994).

Consequently, Article 57 of that law protects the use of native language in the respective territories and states that the education of ethnic groups with their own linguistic tradition will be bilingual, taking the native language of the respective group as the basis for schooling. Article 58 also establishes that the state will promote and encourage the training of teachers in learning the cultures and languages of ethnic groups.

Article 73 and 77 of that law give autonomy to educational institutions so that each of them can develop its own Institutional Educational Project, specifying, among other things, the principles and purposes of the establishment, the available and

necessary teaching and learning resources, the pedagogical strategy, the regulations for teachers and students, and the management system, and that it should respond to the needs of the student population in that region. In addition, educational institutions are free to organize the fundamental areas of knowledge defined for each level; to introduce optional subjects within the areas established by the law; to adapt certain areas to regional needs and characteristics; to adopt teaching methods; and to organize training, cultural, and sports activities. These changes were a great achievement for Colombian education, since the curriculum up to that time was centralized and the same for the entire country, ignoring the needs and educational particularities of each region.

10.3.2   The Mathematics of the Indigenous Peoples in Ethnoeducation

The autonomy provided by *Colombia's General Law on Education* and the existence of a decentralized curriculum have provided ample possibilities of including the mathematical knowledge of different cultures in the Colombian education system. Thus, it is the elementary, secondary, or higher education institutions that define the philosophical position they will assume in relation to mathematics and, according to that, they select the contents, the working methodology, and the type of assessment they will use in the classroom.

On the other hand, the curricular frameworks for mathematical competency propose that teachers think about mathematics from a sociocultural perspective, as knowledge that is in dynamic and constant development, produced from the activity of specific cultural groups living in a society and in a given period of time. *The Basic Standards for Mathematics Competencies* call on mathematics teachers to consider the mathematical knowledge present in the practical activities of the environment, noting that "it is not a matter related solely to cognitive aspects, but involves factors of an affective and social nature, linked to particular learning contexts" (Ministerio de Educación Nacional de Colombia, 2006, p. 47). The *Curricular Guidelines for Mathematics* state that the objective of mathematics education is to guide students to appropriate the elements of their culture and construct socially shared meanings, without, of course, neglecting the elements of universal mathematical culture" (Ministerio de Educación Nacional de Colombia, 1998, p. 30).

As can be observed, Colombian education regulations are an element that facilitates the development of the contextualization of mathematics teaching for indigenous peoples, as well as for the Roma and Afro-descendent peoples in Colombia.

10.3.3   Intercultural Education in Chilean Legislation

Concern about sociocultural diversity in public policies in Chile began two decades ago. The indigenous peoples living in Chile are not currently recognized in the constitution. However, as a result of their demands and mobilization, some progress has been made in the legal and educational areas. The two most relevant legal landmarks that have resulted from these actions are Convention 169 of the International Labor Organisation and the Indigenous Law Nº 19.253.

ILO Convention 169 states that governments have a duty to recognize, respect, and protect the social, cultural, religious, and spiritual values and practices of peoples and to support the development of educational programs that meet the needs of indigenous peoples. It also recognizes the right of indigenous peoples to establish their own educational institutions and facilities (ILO, 1989).

Chile did not ratify Convention 169 until 2008, but the existence of this agreement led to the signing of the so-called Nueva Imperial Agreement in 1989, in which the future government committed itself with the country's indigenous communities to the "constitutional recognition of indigenous peoples and their fundamental economic, social, and cultural rights" (Organizaciones Indígenas-Aylwin, 1989, p. 1). Although constitutional recognition of the indigenous peoples has yet not been achieved, this agreement was an important precedent for the enactment of the Indigenous Law in 1993. By means of this law, for the first time the Chilean state recognized the existence of indigenous peoples as subjects of public interest, establishing that legislation should be passed for their benefit. Articles 28 and 32 of the law stipulate that the state will protect and promote the preservation of indigenous languages and cultures, and that a system of intercultural bilingual education will be developed in areas with a high concentration of indigenous people, so that indigenous students can develop adequately both in their society of origin and in society as a whole (Ley Indígena 19.253, 1993).

In 1996, in order to begin to implement the provisions of the Indigenous Law, the Intercultural Bilingual Education Program (PEIB, by the Spanish acronym) was created as a result of an agreement between the Ministry of Education of Chile (MINEDUC) and the National Indigenous Development Corporation (CONADI). That same year, MINEDUC enacted Supreme Decree Nº 40, which provided for the development of Own Plans and Programs and curricular adjustments, and Bilingual Decree Nº 520 of 1996, which enabled the possibility of teaching native languages through a specific subject, occupying and/or sharing the hours destined to teaching Spanish, on the condition that, at the end of eighth grade, all the Fundamental Objectives (OF, by the Spanish acronym) and Minimum Obligatory Contents (CMO) of the Spanish Sub-sector have been met. Based on these regulations, in 1996–2000 pilot a number of experiences of Intercultural Bilingual Education (EIB, by the Spanish acronym) were implemented and assessed in various schools around the country in order to identify strategies relevant to the cultural and linguistic diversity of the students and to prepare didactic and curricular guidelines for the development of EIB. On the basis of these experiences, the PEIB was institutionalized between 2001

and 2005 and a targeted policy began to be developed that was gradually expanded to those schools with characteristics similar to those that participated in the pilots. Thus, some 170 schools receive support for the contextualization of their Institutional Educational Projects (PEIs, by the Spanish acronym) and for the development of their own curricula, taking into account the cultural particularities of indigenous peoples (Matus & Loncón, 2012). In addition, MINEDUC has developed *curricular guidelines* to contextualize the curricula for Language and Communication; Mathematics; Comprehension of the Natural, Social, and Cultural Environment; Technological Education; Art Education; and Physical Education in schools with a large proportion of indigenous students, whether or not they are targeted by the PEIB. *Textbooks* in mathematics and science for the first, second, third, and fourth grades were also made available to these schools in *Aymara*, *Mapuche*, and *Licán Antay* contexts.

The main idea guiding this entire period is that the contextualization of the curriculum in relation to culture and language could be a factor that would positively influence the learning achievements of students in these schools. However, the assessment of the work carried out until then showed that the curricular intervention did not succeed in promoting interculturality or bilingualism, and that it was important to redefine certain aspects of the project (of Intercultural Bilingual Education). This is why the PEIB is turning its attention to the community and the need for intercultural education in schools to be led by a pedagogical pair consisting of a mentor teacher, preferably indigenous, and a traditional educator, appointed by the indigenous community for teaching indigenous culture and language (Acuña, 2012).

In 2009, General Education Law N° 20.320 was enacted, which regulates the education offered to the Chilean population, and which, for the first time, explicitly includes indigenous peoples. Articles 3 and 4 state that its guiding principles are diversity, flexibility, and interculturality, and it establishes that it is the duty of the state to promote education policies that recognize and strengthen native cultures. Intercultural bilingual education is defined in Article 23, which states "it is expressed in the curriculum sector aimed at children, young people, and adults who recognize the cultural diversity and native diversity and in which the language, worldview and history of their native people are taught and transmitted, establishing a harmonious dialogue in society". This article also states that curricular adaptations will be made for specific educational needs, such as interculturality. Articles 28, 29, and 30 define general objectives for schools with a high percentage of indigenous students as: the understanding, expression, and protection of the indigenous language in order to learn about and recognize the history and culture of their people (Ministerio de Educación de Chile, 2009a).

That same year, Education Decree N° 280 regulated the implementation of the Indigenous Language Sector subject, establishing that it would be compulsory for schools with more than 50% indigenous students as of 2010 or more than 20% as of 2013 to teach the subject from the following school year. The rest of the schools may teach the subject as an option (Ministerio de Educación de Chile, 2009b).

At the end of 2012, new *curricula* were due to be approved, providing specific time for the Indigenous Language Sector (SLI, by the Spanish acronym) between first and fourth grade, so it would no longer be necessary to use the time allotted for

learning Spanish (Ministerio de Educación de Chile, 2012a). Between 2010 and the end of 2013, the *curricula* for the SLI subject were approved for first, second, third, and fourth grades for the *Aymara*, *Quechua*, *Mapudungun*, and *Rapa Nui* languages. In March 2014, Chile's Ministry of Education also made didactic guidelines available to teachers for *Aymara*, *Mapudungun*, and *Rapa Nui* in fifth grade. Between 2010 and 2012, the United Nations International Children's Emergency Fund (UNICEF) developed pedagogical guides to support the planning and implementation of the SLI in first, second and third grade for *Aymara*, *Quechua*, and *Mapuche* contexts. And in 2013, *textbooks* for teaching the *Aymara*, *Mapudungun*, and *Quechua* languages were published for first grade.

10.3.4   Mathematics in Intercultural Education

In Chile, the existence of a centralized curriculum at the national level that establishes learning objectives for all schools in the country does not facilitate inclusion of the mathematical knowledge of indigenous peoples. In contrast to Colombia, teachers who teach mathematics in Chile cannot define the content or learning objectives to be addressed in the subject of mathematics, but only the methodologies with which they are addressed.

On the other hand, the sociocultural perspective of mathematics has not yet permeated the education system and a view of mathematics that is detached from history and culture still prevails. The foundations of the curricular bases for mathematics approved in 2012 (Ministerio de Educación de Chile, 2012b) are an advance in this area, as they point to the dynamic nature of mathematical knowledge and characterize mathematics based on its origin and social purpose. However, they do not mention that mathematics is a construct of the activity of specific cultural groups, nor do they look at the relationship that may exist between learning mathematics and the appropriation of elements of their culture through learning objectives.

Thus, opportunities for the development of mathematics for indigenous peoples in school are provided through work with the Indigenous Language Sector, through the contextualization of the mathematics curriculum or a different subject in the regular curriculum that can be linked to the mathematical knowledge of the community, through the development of plans and programs for an existing subject, or the creation of a new subject. Only in the latter case are teachers free to choose the knowledge to be taught. With these options, they must necessarily work in accordance with all the learning objectives outlined in the current curricular framework, being able to alter the sequence in which they address them and complement them with new content and objectives.

10.3.5 Comparative Analysis Between the Chilean and Colombian Education Systems with Regard to Intercultural Education in 1990–2013

When comparing the legal and administrative systems with respect to the education of indigenous peoples, we find various similarities and differences between the two nations. Of these, we would like to point to the following:

- Both countries ratified ILO Convention 169, Colombia in 1991 and Chile in 2008. This was one of the first significant steps towards the recognition of indigenous peoples and the need for different education that recognizes their culture, history, and language.
- Undoubtedly, the constitutional recognition of indigenous peoples in Colombia in 1991 was a great step towards equity and respect for these communities. In Chile, indigenous peoples do not yet have constitutional recognition.
- Educational programs were created in both countries. In Colombia, the *Ethnoeducation program* was created in 1994 for ethnic groups: indigenous people, Afro-descendants, and Roma. In Chile, in 1996, the *Intercultural Bilingual Education Program—PEIB* was created for indigenous peoples.
- The Ethnoeducation program in Colombia has a broad and comprehensive perspective with respect to the knowledge of indigenous peoples. In Chile, the PEIB focuses its efforts mainly on the preservation of languages.
- Both Ethnoeducation and the PEIB are programs that are aimed at stimulating bilingualism where one language is Spanish and the other is one of the indigenous peoples' languages.
- The Ethnoeducation program is immersed in a national decentralized open curriculum policy. The Intercultural Bilingual Education Program has to operate within a centralized and standardized national curriculum policy.
- In the mathematics area in Colombia, the national curriculum guidelines since 1998 and the 2006 standards of competency both promote the idea of mathematics as a product of culture. In Chile, the 2012 mathematics curriculum guidelines conceptualize mathematics as being unrelated to specific cultural groups.
- In Chile, textbooks have been published for the initial levels of education to support educators in teaching the languages of their indigenous peoples. There have been no similar initiatives in Colombia.

This concludes the review of the legal and administrative regulations of the two countries. In the following section, we will discuss the institutions that address mathematical knowledge in the context of the implementation of intercultural educational programs in Colombia and Chile.

10.4   Intercultural Education Schools Incorporating Indigenous Mathematical Knowledge in Colombia and Chile

In Colombia, there have been experiences in incorporating indigenous mathematical knowledge into the elementary, secondary, and higher education levels, as well as in training ethnoeducational teachers. We will examine some of these experiences in this section.

10.4.1   Characterization of Educational Institutions That Incorporate Indigenous Mathematical Knowledge in Colombia

Educational institutions can be characterized according to the type of community and the area in which they are inserted, as well as in accordance with the origin of the initiatives they carry out, the knowledge through which they which can incorporate the mathematical knowledge of the communities, or the level of training of the teachers (Table 10.1).

Most of the institutions that have incorporated native mathematics operate in elementary and secondary education. Colombia has approximately 87 indigenous peoples with a presence in various departments of the country and—since the 1980s—a large proportion of them have developed their own education projects or have transformed their institutional education projects, including changes to their mathematics curricula. One such case is that of the *Iku*, better known as the *Arhuacos*. This indigenous community was the first to have pedagogical graduates assume what

Table 10.1 Experiences in incorporating indigenous mathematical knowledge into the Colombian education system

Zones	Ethnoeducational initiatives are managed by	Knowledge incorporated into the curriculum	Teacher training
Rural	The community itself The community supported by NGOs	Mathematics Language Arts and crafts	High-school diploma High-school diploma in pedagogy
Urban	The community supported by universities and/or NGOs The community and the Ministry of National and/or Municipal Education	Traditional medicine Dances Local gastronomy History of the community Ceremonial rituals (festive or funerary) Territory Typical dress, among others	Teacher trainers Graduates Ethno-educators Community mothers Professionals in other disciplines
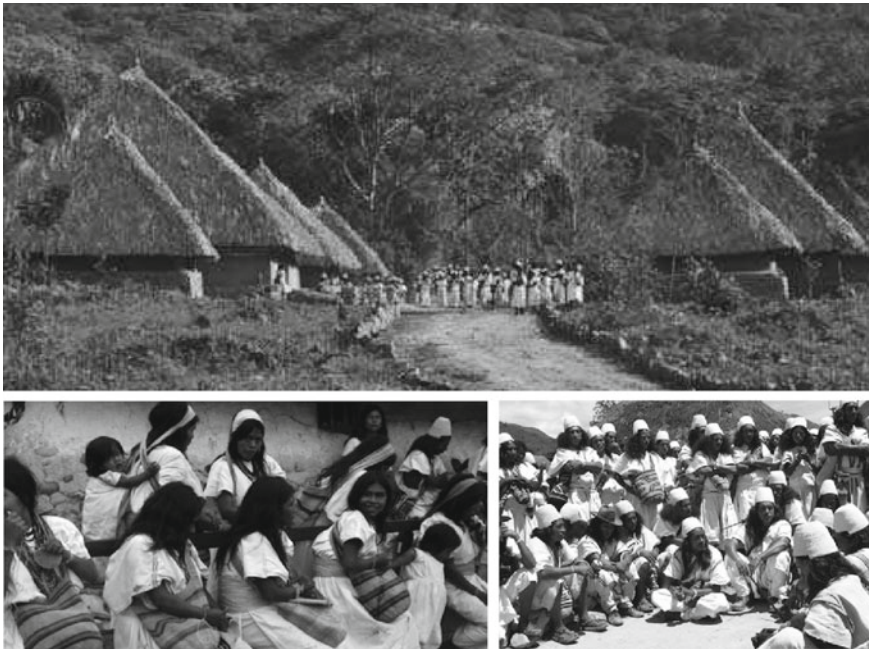
Fig. 10.2 *Arhuaca* community. Image available at: http://1.bp.blogspot.com/_l-qLThlFah8/SB4 JRbkHg7I/AAAAAAAABTk/OGZwbDF9Ucc/s400/pueblo+bello+indios.JPG

they called Own Education and were the first indigenous people, according to Torres et al. (2001), to address their education and health based on their cultural reality. Figure 10.2 is an image of the *Arhuaca* community.

According to Torres et al. (2001), in 1982 the Education Committee was created and a detailed analysis was carried out of the type of education to which they were subjected through the Capuchin mission, which attempted to convert them to Catholicism at all costs. The Education Committee then halted classes for a year to redesign the curriculum and the type of education they wanted, with one of the areas to be redesigned being mathematics. There is a currently network of schools guided by the *Arhuaco Education Committee*. This organization has been in charge of the school education process since the *Mamos* (religious authorities) warned that the educational models of the Colombian Ministry of National Education were dividing them into two groups, one traditional and the other non-traditional. This was attributed to learning of Western religion, Spanish, and particularly mathematics, since school mathematics developed other forms of reasoning by means of the laws of inference of propositional logic, of organizing information, of interpreting nature, and of abstracting; that is, they were creating another cosmology, which was provoking serious transformations within the community. The educational model created by the Arhuaco Education Committee (CEA, by the Spanish acronym), includes objectives that are supported by the following principles (CEA, 1986), cited in Aroca (2009):

- To lead the indigenous person to value themself so that they appreciate and esteem their status as indigenous.
- To complement the training of indigenous people in those fields that are necessary for them to seek the paths of their own development.
- To train indigenous people to solve their own problems in the fields of health, economy, etc.
- To achieve a relationship of equality and respect between indigenous communities and national society.
- To ensure that the indigenous person is harmoniously integrated into national society with the values and techniques of their culture.
- To strengthen existing mechanisms and seek new ones to protect natural resources.
- To promote within indigenous groups the creation and development of community and fraternal forms, as well as new levels of social development that make fairer distribution possible among the members of the community.

In this sense, mathematics plays an essential role in the formation of a competent indigenous person for commercial exchange, knowledge, and management of propositional logic, but it is important to bear in mind that there is an ancestral logic that is not necessarily governed by the laws of inference and that such logic defends beliefs and culture itself. This *Arhuaco* educational model involves an assessment system that is different from the assessments in the official educational system. Thus, the indigenous student faces a system of assessment that is developed by the indigenous people themselves, particularly in the central region of the *Arhuaco* reservation, since "the assessment of own knowledge was carried out taking into account traditional forms according to the subject to be taught with guidance from parents and others community elders involved in the training of such students" (Zalabata & Zalabata, 2000). However, in the Proposed Cultural Plan of the Arhuaco People systematized by Torres (n.d.) it is stated that, in education, one of the problems is that the approaches, activities, and those who administer the educational processes are not focused on the reproduction of culture. This problem is highly visible in the area of mathematics teaching. Therefore, it is necessary to develop an approach that protects the heritage and the production of own knowledge.

There are also experiences of incorporating ethnomathematics into initial teacher training in ethnoeducation or mathematics degrees. According to the National Higher Education Information System of the Ministry of National Education. (SNIES, by the Spanish acronym), there are 24 active operating records for the degree in ethnoeducation, but it was possible to verify[1] that only five of them are actually in operation, and that, of these, two explicit offer training courses in ethnomathematics or related subjects. One particular case is the Bachelor's Degree in Pedagogy of Mother Earth offered by Universidad of Antioquia over 12 semesters. The curriculum includes eight semester courses. These are called ethnomathematics and are of a

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[1] In a study, as yet unpublished, carried out by Carolina Tamayo of Universidade Federal de São Carlos, Brazil, Armando Aroca of Universidad del Atlántico, Colombia, and Hilbert Blanco-Álvarez of Universidad de Nariño, Colombia, this conclusion could be reached.

theoretical-practical nature. This methodological approach is an example of great interest.

Another example that includes ethnomathematics in training, this time in initial training of mathematics teachers, is the mathematics degree program at Universidad de Nariño. Since 2006, this program has included two permanent annual courses in mathematics education and culture (I and II) into its curriculum. These courses discuss the theoretical elements of ethnomathematics and its contribution to the ethnoeducational processes being carried out in the region's indigenous and Afro-descendant communities. One of the activities on the courses consists of visiting the ethnoeducational institutions of the indigenous communities of Putumayo. Once there, a discussion is held with the teachers and students on the curriculum, ethno-mathematics, and ethnoeducation. On an optional basis, students can also extend their knowledge about the relationship between ethnomathematics and ethnoeducation through two elective courses and undergraduate work.

In Colombia, there are many experiences in the incorporation of the mathematics of the indigenous peoples. However, this process has not been free from difficulties, since the communities in which these experiences have taken place generally live in very difficult social conditions, because they have low economic resources with limited or poor basic services, and they live in areas of violence or forced displace-ment with very poor access. There are also institutional difficulties regarding the development of ethnoeducation in the communities: the educational institutions have a lack of didactic materials; the state neglects to provide support for the development of internal educational policies; the curricular processes are developed according to schedules that do not necessarily represent their traditions; and the students are subjected to state tests that are classificatory, exclusionary, and discriminatory. Teacher training is also a significant issue, since there are teachers who do not belong to or do not reside in the community and who show little interest in learning about it, and even native teachers who do not adhere to the curricular guidelines of the commu-nity. All of this is consistent with the criticisms outlined by Valero and Skovsmose (2012), who, through their studies on mathematics and democracy, have put forward the thesis that current mathematics education fulfills functions of differentiation and exclusion. There is also agreement with Skovsmose et al. (2008), who maintain that the significance of mathematical education is not only given by the understanding of mathematical concepts, but also by the future of students, that is, the perception of their future possibilities in life as they appear to the individual in their socio-political context.

Table 10.2 Characterization of intercultural educational institutions that incorporate indigenous mathematical knowledge in Chile

Community	Zones	Intercultural projects are managed	Educational level	Teacher training	Subject covered
Mapuche	Rural	With community support	Preschool education	Elementary education teachers	Mathematics
		Without community support	Elementary education	Intercultural elementary education teachers	Indigenous language
Aymara	Urban	By the community	Secondary education	Traditional educators	Science
			Higher education		Others

10.4.2 Characterization of Educational Institutions That Incorporate Mathematical Knowledge of Indigenous Peoples in Chile

In Chile there have been experiences of the explicit incorporation of indigenous peoples' mathematics into the education system at the preschool, elementary, and higher education levels. In this chapter, we analyze the educational institutions that have incorporated indigenous ethnomathematical knowledge based on the systematized information available in studies by MINEDUC on the implementation of EIB and on the analysis of teacher training networks in higher education.

These institutions can be characterized according to the indigenous communities in which they are located, the administration of intercultural education projects, the level of education at which they are carried out, the subject matter in which they address indigenous mathematics, and teacher training (Table 10.2).

Most of the educational institutions that have incorporated indigenous mathematical knowledge are in the *Mapuche* context,[2] are among the schools targeted by the PEIB, and are concentrated in elementary education. Meanwhile, in higher education, both the Basic Intercultural Pedagogy course in the *Mapuche* context of Universidad Católica de Temuco and the Intercultural Bilingual Pedagogy Department of Universidad Arturo Prat in Iquique, which trains teachers for the *Aymara* context, address the mathematics of indigenous peoples as part of their regular training. There are experiences at the level of preschool and secondary education, but they are not addressed in

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[2] There are other contexts in Chile such as *Aymara*, *Rapa Nui*, or *Lican Antay*, among others. The *Mapuche*, *Aymara*, and *Rapa Nui* peoples are the ones that have a certain level of linguistic "vitality" and have the largest population. We mention schools in a *Mapuche* or *Aymara* context because the students in the schools are mixed and not just of one ethnicity: the law states that EIB must be applied if 20% or more of the students in a school are of indigenous descent.

this text because it has not been possible to collect systematized information on these levels. Figure 10.3 shows an image of the *Mapuche* people, particularly in terms of their struggles.

With regard to teacher training, 38% of schools have a teaching staff consisting of one teacher mentor who is an elementary education (or intercultural elementary education) teacher and a traditional educator chosen by the community. The rest usually work only with a mentor teacher or traditional educator (Acuña, 2012).

Within elementary education, the experiences are concentrated in the initial training of students. This is because systematized indigenous mathematical knowledge refers mostly to counting and measurement, and, for this reason, school texts and teaching support materials have been developed to support these initiatives in the first cycle of elementary education (from first to fourth grade). There are schools that have addressed indigenous mathematics by developing their own plans and programs in the subject of mathematics or through their own plans and programs in related

Fig. 10.3 In Chile the *Mapuche* are fighting for territory and autonomy, which is similar to what is happening in southwestern Colombia. Education is not excepted from these processes of cultural defense. Image available at: http://arainfo.org/wordpress/wp-content/uploads/2014/05/Mapuches-Chile.jpg

subjects, as well as schools that, with or without their own plans and programs, have contextualized mathematics with the support of school texts from PEIB-Origins.

A study carried out by the PEIB (Matus & Loncón, 2012) shows that there are few own plans and programs aimed at contextualizing mathematics, since, of the 113 plans analyzed, 65% focus on the indigenous language and 35% address indigenous culture through other subjects. Of the 39 plans and programs that address indigenous culture by contextualizing elements of the worldview of indigenous peoples in various learning areas other than language and communication, only five address mathematics, or 4% of the total plans and programs. One of them is a school in the *Lican Antay* or *Atacameño* context and the other four are schools in the *Mapuche* context. However, given that mathematics is implicit in daily activities in the indigenous world, it is likely that indigenous mathematical knowledge is addressed through their own plans and programs for related subjects such as science or environmental understanding.

An example of the development of an own mathematics curriculum contextualized in the indigenous culture is that of Escuela Básica Rural E-26 in San Pedro de Atacama, which is aimed at students from first to fourth grade. This school is part of the *Lican Antay* culture, which has lost much of its *Kunza* language, so the point of developing its own mathematics curriculum is to contribute to the recovery of its language and culture: "for Atacameño children to know, value, and understand their culture, through the use of their own elements that can be incorporated into formal education" (Matus & Loncón, 2012, p. 77).

The program is developed by linking the *Lican Antay* principles of *reciprocity and community manifestations, authenticity and identity*, to the mathematical knowledge embedded in the activities of their community. Some of the knowledge and activities addressed are: *mingas*,[3] rites, and ceremonies; the observation of figures in nature to apply them in the creation of textiles and ceramics through the use of geometric figures; and the use of astronomy to create agricultural calendars and establish irrigation shifts. The aim of this is to show that there is harmony between nature and the human being (Matus & Loncón, 2012).

On the other hand, the PEIB schools located in *Aymara*, *Mapuche*, and *Lican Antay* contexts, whether they have developed their own plans and programs or not, had the possibility of addressing mathematics in a cultural context in the subject of mathematics education in first, second, third, and fourth grades with the support of mathematics instructional texts produced by PEIB-Origins between 2002 and 2005. These texts addressed school mathematical knowledge in the context of the indigenous community's own activities and incorporated some indigenous mathematical knowledge on how to name numbers in the native language, on the units of measurement used by each people, and on some of the technological tools used for counting (*kipú*) and calculating (*yupana*) in the *Aymara* and *Quechua* cultures.

Starting in 2010, the PEIB's efforts were focused on the implementation of a specific subject aimed at learning the language and culture, which is mandatory for

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[3] Community activities where the members provide mutual aid to resolve a problem or achieve an objective.

schools with indigenous populations. Curricula for the implementation of the new Indigenous Language Sector subject were developed for the first, second, third, and fourth grades for cultures with living languages (*Aymara*, *Quechua*, *Mapudungun*, and *Rapa Nui*) and supporting texts for the subject for first grade in the *Aymara*, *Mapuche*, and *Quechua* contexts. With a few minor exceptions—such as the use of *kipú* in the *Aymara* and *Quechua* contexts—these texts do not explain the indigenous mathematical knowledge embedded in some of the community activities that they address, as the focus is on learning the language and culture, and there is little awareness that mathematics is also part of the culture. However, because indigenous mathematics is embedded in community traditions and activities, it emerges in everyday study of culture.

Educational institutions in Chile also have difficulties in carrying out projects to teach mathematics in an indigenous context. As in Colombia, the indigenous communities in which these experiences take place also face complex social and political conditions, since they have scarce economic resources and a large part of the *Mapuche* schools are in areas with high levels of police violence. The institutional challenges for the development of intercultural education are also similar: there is little state support for the implementation of intercultural education and the development of internal educational policies; in some communities school calendars do not correspond to their own; and Chilean students also have to undergo state assessments that are classificatory, exclusionary, and discriminatory. On the other hand, there are difficulties with the suitability of teachers, since there are also cases in which teachers do not belong or are not linked to the community, or in which indigenous teachers have been trained according to assimilationist approaches that do not value local culture or which consider it an obstacle to student learning, and there may even be cases of discrimination (Acuña, 2012).

10.5 Final Reflections: Progress and Challenges in Incorporating Indigenous Mathematical Knowledge and Practices into the Education Systems of Both Countries

In this section, we address the progress we have seen and the challenges that have emerged from the discussion on indigenous mathematical knowledge and intercultural education, the legal and administrative legislation that governs the development and implementation of ethnoeducation or intercultural education projects in Colombia and Chile, and the analysis of some of the experiences of incorporating indigenous mathematical knowledge into the education systems of the two countries examined in this chapter.

With regard to the discussion on indigenous mathematical knowledge and intercultural education, we have observed the following advances for the incorporation of indigenous mathematical knowledge into schools:

The growing importance of sociocultural approaches within mathematics education is making it possible to consolidate a broader view of the nature of mathematics. This process, together with the Indigenous Emergency process (Bengoa, 2009) has contributed to the validation of indigenous mathematical knowledge. The combination of these two processes has made it possible to understand that Western rationality is that which gives rise to and on which the significance of scientific mathematical knowledge is based, and indigenous knowledge is an equally valid type of knowledge, which needs to be understood according to the very rationalities on which it is based.

On the other hand, the challenges we mention are related to teachers in indigenous schools and researchers in ethnomathematics. One of them is the importance of encouraging and expanding reflection with teachers in indigenous schools or in an indigenous context regarding the nature of mathematics, raising awareness of the problem of the need for a transition from the Platonic perspective to the sociocultural perspective.

On the other hand, it is essential for researchers working in the field of ethnomathematics with indigenous communities to form more connections with them in order to achieve the intercultural inter-comprehension needed to address indigenous mathematical knowledge based on the rationality of the peoples who create and use it. A second challenge for researchers is to develop and deepen epistemological and methodological reflection on how we identify indigenous mathematical knowledge that is present in the practices of the communities. In this regard, it is important to systematize the experiences of incorporating indigenous mathematical knowledge into schools where it is carried out with and by the indigenous communities in order to learn from their successes and limitations and to collect ideas that could provide inputs for theoretical reflection.

In terms of legislation and education, we believe that the ethnoeducation and intercultural education projects represent progress for the indigenous peoples of Colombia and Chile. A significant advance for Colombia is the autonomy provided by the Ethnoeducation Act for the development of educational projects by indigenous communities, while an urgent challenge for the indigenous peoples in Chile is their constitutional recognition.

Both countries face challenges with respect to the system for assessing the learning of students participating in ethnoeducation and intercultural education projects. In spite of the fact that these are contextualized educational processes, the governments apply standardized national tests to these populations, which, without a doubt, is contradictory to the objectives of both Ethnoeducation in Colombia and the Intercultural Bilingual Education Program in Chile.

Another challenge in which more efforts must be invested is related to the systematic and autonomous creation of school texts that contextualize school mathematics and/or incorporate other mathematical knowledge that is present in the communities. These texts should be designed by members of indigenous peoples with the support of specialists in mathematics education (didactic expects and disciplinary pedagogues).

A fourth challenge entails the design of new curricula for training mathematics teachers, ethnoeducators, and intercultural teachers. These curricula need to be based on a sociocultural perspective of mathematics and on respect for other rationalities different to that originating in the Western world. By doing this, it will also be possible to develop relevant didactic approaches in which school mathematical knowledge and indigenous mathematical knowledge can interact.

Finally, we present what we consider to be the advances, and some of the related challenges, outlined in our analysis throughout this chapter.

We consider it to be a step forward that experiences in both countries have been identified where indigenous mathematical knowledge is incorporated into schools, in circumstances in which, until a few years ago, it might have seemed unthinkable to establish a relationship between mathematics and the official school culture (curriculum).

Another advance, we believe, is the incorporation of ethnomathematics into teacher training for elementary and intercultural education in Chile and Colombia, and for mathematics education in Colombia. One of the challenges is to incorporate ethnomathematics into training mathematics teachers in Chile in order to contribute to the development of mathematics education based on equity and respect for sociocultural diversity (Peña-Rincón et al., 2015). Another challenge for Chile is to include the study of indigenous mathematical knowledge in Intercultural Bilingual Education projects as an important aspect of the cultural heritage of indigenous peoples. Meanwhile, Colombia has the challenge of strengthening the curricula for the Bachelor's Degree in Ethnoeducation in order to expand the development of teaching and learning indigenous mathematical knowledge.

There is no doubt that there is still a long way to go. However, our aim here is to outline the problem of incorporating indigenous mathematical knowledge into classrooms in order to stimulate reflection and discussion on the challenges described.

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Chapter 11
Intercultural Mathematics Education: Proposals and Projections from the Mapuche People

Anahí Huencho, Francisco Rojas, and Andrew Webb

11.1 Introduction

In this chapter, we understand mathematical work in the classroom and mathematics itself as cultural and historical products, which have their origin in specific social needs, the activities and practice of which are closely related to the context. In order to reflect on this understanding, this chapter begins by discussing the differences in the school performance of indigenous students in context, and by highlighting the main problems associated with learning mathematics on the part of students belonging to native peoples. This enables us to propose a vision of mathematical learning based on the sociocultural relationships that occur within the classroom, where emphasis is placed on the identification of children with their native culture that breaks down the barriers created for students by Western mathematics and its traditional way of teaching. Within this framework, we present a methodological and didactic alternative that emerges from the *Mapuche* people's natural ways of being and knowing and their inclusion in the classroom. Based on the observations of this experience, we will address the challenges and future projections for *intercultural mathematics education* for all.

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The necessary transition from an integrationist paradigm to one of full inclusion requires participation, recognition, and redistribution as a basic triad for the development of *inclusive education policies*, fostering *research in and with* sociocultural groups, which includes an active vision of mathematics.

11.2 The Mathematics Learning Gap in Chile's Indigenous Population

The historical context of education in Chile, as well as its reforms, open a window on understanding the relationships and conflicts between nationalism, indigeneity, and rights. From the country's independence onwards, education has taken on a "civilizing" and assimilating role (Marimán, 1997), which has been resisted by *Mapuche* groups (Bengoa, 1985; Föerster & Montecinos, 1988). The demands of native groups had some impact on public policy in the education reforms of the 1960s, since the curriculum was made more flexible in order to address the different sociocultural contexts in the country (Cañulef, 1998), and, in the early 1970s residential homes and funds were created for indigenous students, allowing them access to higher education that had been almost non-existent up until that time. The current indigenous scholarship scheme and the development of the Intercultural Bilingual Education Program (PEIB) are the result of a long journey and extensive public debate on indigenous rights and education policy in Chile. Intercultural Bilingual Education has provided important elements of linguistic and sociocultural recognition and revitalization. However, this education policy continues to conceive achievement as an individual matter, divorced from its socio-political context, limiting the possibilities of egalitarian performance.

López and Küper (2000) point out that this type of policy is justified insofar as it improves performance for native peoples, thus highlighting the compensatory and unequal nature of such initiatives. Evidence of this is provided by some of the results of the National Education Quality Measurement System (Simce), which show, for example, that in the 2011 assessment the PEIB had no effect on performance in the areas of Language and Mathematics in fourth grade. In addition, the Simce 2013 results demonstrated that the lowest average mathematics achievements were seen in the regions where the indigenous *Aymara* and *Mapuche* populations are most densely concentrated. In general, studies on mathematics achievement on Simce among indigenous (mainly *Mapuche*) and non-indigenous children have found a gap between these two groups of students (indigenous and non-indigenous) and have also identified a significant association between socioeconomic and indigenous origin (McEwan, 2004, 2008; Noé et al., 2005; Undurraga, 2014). While Noé et al. (2005) note that a higher proportion of indigenous students in the classroom would have a positive effect on the performance of indigenous students, Undurraga (2014) and Canales and Webb (currently under review) cite results that suggest that the indigenous/non-indigenous gap in eighth grade and 10th grade Simce scores is

particularly significant in school settings with a high concentration of indigenous students.

At the national level, it can be said that indigenous children and young people perform on par with their peers in the same social class,[1] a result that changes when the proportion of indigenous children in the school is taken into account. This is in line with international literature that has shown that attending ethnically diverse schools has negative effects for students from an ethnic minority, but not for the majority group (Friesen & Krauth, 2010; Mickelson et al., 2013). There are various explanations for the detrimental effects of studying in ethnically diverse schools: the peer effect (such as school expectations), institutional resources, teacher quality, and institutional discrimination (implicit mechanisms of racism in the education system) are the main factors (Harris, 2010). Indeed, Webb (2014) and Webb and Radcliffe (2015) show how racial and socioeconomic discrimination combine to create feelings of marginality in high schools with high proportions of *Mapuche* students. In fact, secondary schools that include an intercultural bilingual curriculum have been labelled as "*Mapuche* schools", reinforcing the notion that interculturality exists only for indigenous people (Chiodi, 2005). The negative association with *Mapuche* culture is prominent among students in these types of schools. A large percentage of young people deny the existence of discrimination, since the schools opt for a "color blind" policy that requires them to treat all students "like any Chilean" (Luna, 2015; Webb & Radcliffe, 2015).

In the rural, mostly indigenous schools in southern Chile, the reproduction of disadvantage is strongly associated with the spatial segregation of the *Mapuches* in these schools, so the results of learning gaps must be understood in relation to the prevailing racial discourses. Therefore, educational inequalities are permeated not only by the socioeconomic origin of students, but also by the racialized context of many schools and the cultural relationships that operate within them, where the *normal* status is strongly associated with urban, modern, and Chilean spaces, while the expression of a different cultural identity or education is relegated to an inferior status (Carimán, 2011; Merino & Tocornal, 2012; Oteiza & Merino, 2012; Luna, 2015; Webb & Radcliffe, 2015).

11.3 School Mathematical Activity From a Sociocultural Perspective

The vast majority of citizens have varied experiences related to mathematical learning, mostly due to our time at school. However, many of them exist in non-formal settings, such as solving problems, analyzing conditions, or determining the quantitative or spatial characteristics of certain situations, etc. These processes of

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[1] This leads to the same conclusion as a comparative study of 20 countries: young people from ethnic minorities from more advantaged socioeconomic backgrounds have the same educational outcomes as white majorities (Marks, 2005).

mathematization lead us to understand mathematical work in the classroom and mathematics itself as a situated activity, which has its origin in specific social needs.

The school plays a key role in this in terms of understanding the nature of the discipline and teaching and learning it, which shifts between a *static* vision or a *dynamic* or *sociocultural* view (Peña-Rincón, 2016). In the case of the former, mathematics is understood as a static, cumulative, and unified body of knowledge (Cerón et al., 2012; Miguel, 2010; Blanco, 2008) and as an exact, formal, and logical science made up of a collection of rules, formulae, and themes (Grigutsch, 1997). On the other hand, the latter view places the focus on the action of doing mathematics, understanding that all social groups mathematize their environment with the aim of expressing the regularities observed through different mathematical practices or activities, based on their particular ways of being, knowing, and relating to the world (Bishop, 1999; D'Ambrosio, 2008).

The didactic paradigms, on the other hand, transition between *transmissive* and *constructivist* perspectives (Blanco-Álvarez, 2012a, 2012b; Cerón et al., 2012; Fuentes, 2013). A transmissive approach emphasizes the delivery of factual knowledge, properties, algorithms, and definitions, where the teacher is the protagonist of the interaction, often expository, and where learning depends on the individual characteristics of the student. By contrast, the constructivist paradigm places the focus on the construction of knowledge, the student being the protagonist of a dialogical interaction, and where learning depends on the characteristics of the mathematical task posed and the interactive management carried out by the teacher.

Advancing to socio-constructivist (Vygotsky, 1962, 1978) and sociocultural (Wertsch, 1991) paradigms, learning not only takes place in a space of interaction with others, but it occurs *in* interaction, in the intermediate space between two people negotiating a mathematical meaning. Learning goes from being seen in terms of personal acquisition to a concept in which it is seen as a process of becoming a participant in what is done collectively (Lave & Wenger, 1991). What a sociocultural perspective of school mathematical activity proposes is to place itself on the right side of Fig. 11.1, where the notion of *mathematization* plays a key role by allowing learning to be characterized as a process of mathematical modelling (Maaß, 2006).

When studying the processes of *mathematization situated* in diverse sociocultural groups, what is interesting to observe is the mathematical practices, that is, to study the *ethnomathematical* aspects of these groups (D'Ambrosio, 1985). The situated nature of the practices leads us to see the school, teachers, and students as participants in the processes of teaching and learning mathematics, who use their social and cultural environments to attribute meaning to the mathematical understandings developed in the spaces for construction of meaning.

In short, what is proposed from a sociocultural perspective as classroom work is given by two main elements: the dialogue between the culture and the context as an environment that enables mathematical education, and the spacious dialogues within the classroom to produce mathematical participation (Rojas, 2009), mediated by the mathematizations of the cultures to which students and teachers are affiliated.

Fig. 11.1 Perspectives on the nature of mathematics, its teaching and learning (*Source* Prepared by the authors)
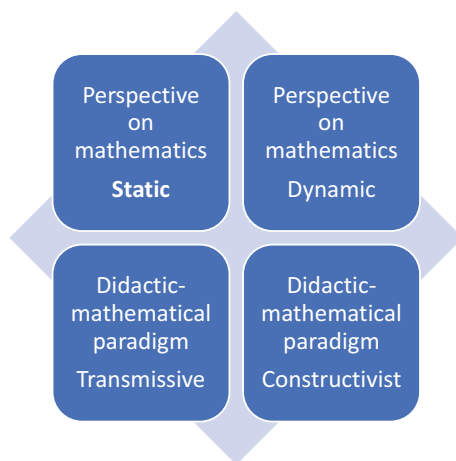
11.4   Cultural Relevance in Processes of Mathematization

The discussion above allows us to recognize the need to make certain changes to curricular and didactic aspects in order to promote educational opportunities that are pertinent to cultures. Considering the "reality" of the student, through the incorporation of cultural aspects in a cross-cutting manner in the curriculum, gives meaning to the mathematical content and increases the interest of students in the learning process (Francois, 2007; Knijnik, 2009; Shockey & Gustafson, 2008). In formal education contexts in rural indigenous communities, the need for change has led to certain advances thanks to the incorporation of mathematical practices into a curriculum that is in line with the needs of these communities (Bandeira & Morey, 2010; Pinxten & Francois, 2011) and by assessing the identity of teachers who work in an ethnically diverse environment in accordance with the demands of the curriculum (Owens, 2014). From the didactic point of view, it is argued that it is necessary to change how mathematics is taught due to the passivity of students who see no real support for learning or applying mathematics (Pais, 2011; Scandiuzzi & Lubeck, 2011). In this respect, activities linked to cultural and social experiences are a way of motivating students to learn mathematics.

The curricular and didactic changes to include the mathematizations of cultural groups in the school context, provided that they are relevant, have been addressed from three perspectives. The first of these has focused on revealing the different ways of doing mathematics (mathematization) that particular sociocultural groups develop, seeking to design didactic materials that incorporate a certain cultural group's ways of doing mathematics in order to improve the learning required in the formal school context (Bandeira & Morey, 2010; Kisker et al., 2012; Knijnik, 2009; Pinxten & Francois, 2007). When these activities are planned without considering the characteristics of the sociocultural group, the formulation of educational practices can end up being irrelevant to the culture (Greer, 2013).

A second aspect has been to characterize different mathematical processes developed by groups of students in the classroom (Sharp & Adams, 2002; Shockey & Gustafson, 2008) and groups of practicing teachers (Garii & Silverman, 2009; Savard & Polotskaia, 2013) who share a similar educational context (belonging to indigenous and non-indigenous peoples). The focus is on understanding the individual differences of the actors in a context carrying out mathematical activities, allowing the use of metacognitive processes to explain the decisions taken and their influence on the desired outcome. This highlights the importance of how students and teachers can reflect on and learn from the diversity of ways of doing and understanding mathematics.

The third aspect on which to work is to create relevant processes of inclusion of cultural mathematizations that contribute to the understanding of the environment in which the students are immersed. Oliveras and Gavarrete (2012) propose that the work carried out with future teachers, particularly in contexts with a high proportions of indigenous students, should focus on understanding the diversity of knowledge of the sociocultural context in which they will be working and how this can be integrated into the formal educational context in such a way that the educational demands of the official curriculum are safeguarded, while also highlighting the people's own knowledge.

On the other hand, since it is the social group that constructs mathematics in order to understand, explain, or make inferences about social problems, classroom activities must go through two stages to be formulated. Firstly, the relevant topics have to be prepared for the community by questioning the subjects involved, in order to collect background information for mathematization, and secondly, actions should be developed actions to understand, explain, and make inferences in accordance with the reality of the group. The construction of classroom activities must therefore be conducted in close collaboration with the holders of knowledge in the respective cultures, where the central issue is to recognize the ways of mathematizing among a given people and incorporate them into the classroom in order to highlight them and give meaning to the teaching and learning processes of the students in the context of school education (Fonseca, 2009; Lipka et al., 2009).

Some studies that have incorporated cultural mathematics have provided hints that this type of work is beneficial. Qualitative studies indicate that the recognition of the students' context in the field of mathematics is a vital tool to establish interest and enjoyment, and, ultimately, to create a positive attitude towards the mathematical activities carried out (Kisker et al., 2012; Shockey & Gustafson, 2008). From a quantitative perspective, some studies show a significant change before and after intervention in the classroom with respect to the academic results of the students, establishing that the culturally situated didactic proposals are an important resource to improve outcomes (Kisker et al., 2012; Sharp & Adams, 2002).

Finally, while most research on the application and use of contextual mathematizations in the classroom use cultural mathematical knowledge for planning and implementing classroom activities, there are very few studies that, in addition to this, delve more deeply into the processes of assessing these results with agents who are familiar with the native peoples. The studies show that integrating cultural

knowledge is generally developed and assessed by people from outside the community, which implies that low importance is given to the opinion of the sociocultural communities in evaluating and validating the results of learning at an academic level.

11.5 Educational Proposal Relevant to the *Mapuche* People in Mathematics

Intercultural Mathematical Education, henceforth IME, is constructed based on the need to highlight the mathematical knowledge of sociocultural groups and to respond to diverse teaching needs. The objective of IME is therefore to generate better learning opportunities for mathematics, which includes diversifying teaching methods and mathematical knowledge, revealing the natural forms of development of the different groups that make up society, whether they are current or ancestral. How do we move towards strategies that incorporate this knowledge? By analyzing the similarities, differences, and mathematical, educational, and social projections surrounding these concepts, we will be able to enrich pedagogical and didactic practices with mechanisms that allow us to challenge and shift the current conceptions of teachers about how they can address their proposal. One way to carry out this shift from Traditional Mathematics Education to Intercultural Mathematics Education requires research, creation, and validation of the different teaching methods and relevant mathematical practices that should interact with the structure of the school system.

It is therefore necessary to develop a model of socio-educational action that seeks to enable the *Mapuche* people to exercise their duty and right as citizens to participate in mathematics education developed according to their own cultural identity. In order to do this, we use the concept of Cultural Projects (Bishop, 1995; Oliveras, 2005), the objective of which is to achieve the enculturation of the people who practice teaching in cultural contexts other than their own, linking mathematics with cultural knowledge. This type of work provides the teaching process with meaning to the people (Kisker et al., 2012) and involves planning a *Mapuche* Sociocultural Project (PSM, by the Spanish acronym) with educational agents that develop in this cultural context (Greer, 2013).

This began with ethnographic work in three rural *Mapuche* communities in the Araucanía Region, which was the basis for developing a teaching proposal in collaboration with the teachers of three multi-grade[2] and multilevel[3] schools belonging to these communities (Table 11.1).

In the ethnographic study, interviews were conducted with various *Mapuche* actors and speakers of *Mapudungún*,[4] who carried out some ancestral sociocultural activity

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[2] Multi-grade refers to schools where students from first to sixth grade share the same classroom.

[3] Multi-level refers to schools that serve students from first to eighth grade and whose classrooms are shared by students who are grouped into sub-cycles from first to sixth grade: first and second grade, third and fourth grade, and fifth and sixth grade.

[4] *Mapuche* language.

Table 11.1 Communities and educational establishments where the experience takes place

District	Mapuche community	Educational establishment
Lautaro	Peuman Mapu	Vega Larga Municipal School
Labranza	Lladquihue Norte[a]	San José Private School
Labranza	Lladquihue Sur	Botronhué Private School

Source Prepared by the authors
[a]Lladquihue Norte and Lladquihue Sur are two independent Mapuche communities, registered with the Division of Indigenous Affairs on a regular basis

or possessed a knowledge of the people that was recognized by the representative of each community and the community in general. In the interviews, they recounted life stories, experiences with the school system, learning Spanish,[5] and teaching activities in the construction of different cultural objects, such as loom weaving, broadcast sowing of seeds, and construction of *rukas*.[6] In this phase, one of the most important issues that emerged from the different stories refers to the natural teaching–learning processes of the *Mapuche* people's knowledge, based on two perspectives: stories of wisdom about historical or cosmogonic elements where verbal expression is the natural means of transmitting information, and observation of an action that is to be replicated, such as care of animals, sowing seeds, cooking, or weaving, among others.

Following the principle of relevance described above, we consider that the PSM should (1) highlight the story and/or the practice or cultural object, (2) test the initial knowledge and carry out the application or observation of the account, and (3) enhance the communication of the analysis developed through action, in order to fulfil the natural principles of the teaching–learning process. Although this is a relevant educational project, there is also a need to be aware of the family practices surrounding the activities proposed by the project, so the investigative process of the educational proposal also considered activities in the family context (parents, guardians, or proxies).[7]

Figure 11.2 summarizes a culturally relevant way of integrating *Mapuche* people's ways of learning into traditional academic activities based on the PSM.

The project was carried out in four classroom sessions plus three activities in the family community, which are directly related to the classroom activity in the previous session. The first class session focuses on establishing the first classroom

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[5] The interviewees speak Spanish and not Spanish as a new language.

[6] Name given to a Mapuche house, the worldview behind the space and orientation, non-standardized measurement ratios used in its construction, native materials.

[7] This group of adults belongs mostly to the same *Mapuche* communities, and most of them are *Mapuche*, few of them speak the native language and they were not generally considered in the ethnographic work because they did not carry out an activity or possess ancestral knowledge visible to the presidents of each community.
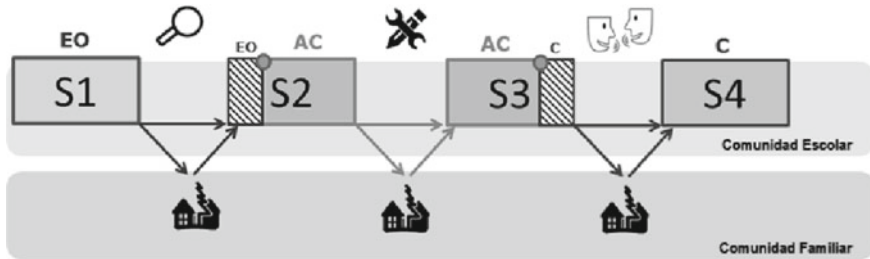
Fig. 11.2 *Mapuche* Sociocultural Project (PSM) (*Source* Prepared by the authors)

contact with the cultural activity or object (LO phase: Listen and Observe). The second and third sessions focused on creating a product that is consistent with the student's daily life, where a mathematical element of the culture had to be replicated and/or reconstructed, based on the new needs for which the activity or object is used (CA Phase: Critical Analysis). The last session involved communicating the recreated and/or reconstructed processes in order to account for the results of the project. In this session it was important to promote the students' arguments to explain how to adapt the mathematical cultural concepts to the new activity proposed (Phase C: Communicate).

As a criterion of relevance, the assessment that the different communities make of the learning process proposed in this project is essential. Thus, the design, study and application of this project was approved and validated by both the educational community of the establishments and by the community of parents and cultural experts.

The relevance of the PSM is associated not only with the form of transmission of knowledge in the *Mapuche* culture, but also with the pairing between that and the content. While the method includes the natural activity of teaching and learning, the content or object to be developed must be related to the *Mapuche* people's ways of being and knowing. Thus, another element that emerged from the ethnographic phase of the research was the cultural mathematical element that was the basis for the PSM. Among the various information collected, we focused on the cultural object called *Püron*, a word that means a knot in a wool thread in the *Mapuche* language (Fig. 11.3). The different ethnographic accounts collected indicated who used it and what it was used for, with the grandparents of the interviewees[8] being the last ones to use the *Püron* in order to record the counting of objects, mainly associated with animals and temporal dimensions.

According to the accounts of the interviewees, it can be inferred that a knot represented a unit and there were two different forms of knot: a normal knot representing a common object, while a thicker knot represented an object whose characteristic we wish to highlight, such as larger size, greater quantity, etc. Thus, the *Püron* served to record, add, remove, or compare elements depending on the need of the context

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[8] None of the interviewees used them in their childhood and did not clearly remember how countable information exceeding 10 was recorded.

Fig. 11.3 Recreation of a
Püron (*Source* Prepared by
the authors)

being recorded. Given its tangible nature, it required oral communication, and its use diminished as the first *Mapuche* students learned to write down the numbers taught at school, which incorporated the written record as the primary means of mathematical communication.

11.5.1 Mapuche Sociocultural Project in Mathematics (PSMM)

This process made us wonder how to design classroom materials that would be relevant to the *Mapuche* people. The first step was to address the expectations and needs that teachers in educational institutions have with regard to the teaching–learning of mathematics. For this purpose, meetings were held with each school, where we met the teacher who taught the subject of mathematics,[9] the traditional educator, and the administration of the school, in order to talk, reflect, and analyze the systematized information of the ethnographic work carried out in the communities in which their schools are located.

The first step to construct didactic material for students, created in conjunction with teachers, focused on showing how countable information recorded with the *Püron* provides powerful mathematical activities to carry out with students: coding in a specific type of non-symbolic (written) record, decoding it, and comparing between records to provide evidence of the mathematical reasoning behind the activity. In this process, the need arose to consider the stages of the PSM, the participation of the various agents involved (traditional educator, mathematics teacher, families), in order to have a range of tasks of different complexity for students from first to sixth grade (in a multi-grade context); to ensure the participation, interest and motivation of all students; and to work only with specific and oral records (non-written tradition).

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[9] One of the three math teachers does not belong to the *Mapuche* people, but has been working at the school for 29 years and is sensitive to rural and cultural issues in the area.

The mathematical activity to be developed in the project was focused on collecting information on the main characteristics of their school (those that the students considered relevant) and quantifying the information to be recorded using knots made on one or various wool threads, which we called "Describing my Environment". The first session of the PSMM was conducted by the traditional educator of the school, who was responsible for providing the historical context of the *Püron*, its various uses, and how to use it. The second session focused on collecting data associated with three different types of tasks that needed to be answered, based on the following three questions: How many are there? What size are the spaces? How old is the school, or what year was it created?

The first question, "How many are there?", involved simple counting of discrete variables with small numbers that would allow subsequent classification and comparison of the numerical data recorded, encouraging the subcategorization of the chosen elements, with the purpose of adapting the manipulative resource (*Püron*). The task was created thinking of the skills of students in the first and second grades, who counted and recorded elements such as the people usually at the school, separated by men and women or adults and children; the animals that live on the school grounds; or the trees, either fruit and non-fruit trees, on the school grounds.

The question "What size are the spaces?" encouraged the measurement of physical spaces, so the student had to apply concepts such as length, width, perimeter, and area of the different spaces, and recognize the need to establish a reliable and transferable unit of measurement to determine their calculations. In this case, the *Püron* had to be adapted to recording area, where the sum of the sides of a rectangular area is not sought, but each side is recorded, giving the *Püron* a different notation to be able to compare without recording the sum of the longitudinal measurements. The task was created considering the abilities of the students in third and fourth grade, recording elements such as the size of the grounds of the school, the playground (a space not delimited within the total school grounds), the classroom, or the school's *ruka.*

Finally, the question "How old is the school?" or "What year was it created?" was the most directed in that the student was not allowed to choose which element made sense to describe their environment, but it enabled progress in creating a code to record a number greater than 1,000, knowing that the *Mapuche* numeric system is finite and only reaches the number 9,999, so it is probable that there was some way to record numbers as large as this with the *Püron.*

Each task implied that students made at least two different and comparable types of records (two wools threads with knots representing quantities), which would allow work on the objective of Session 3 of the PSMM. The students thus answered the questions: "Which is bigger?", "How much bigger?", and "How many times bigger?" In order to answer each of these questions, the students had to choose comparison algorithms associated with the recording code (*Püron*), these mechanisms being as diverse as the variety of coding carried out. Thus, the questions, "What is bigger and how much bigger?" were based on comparison by difference, where students can perform, for example, a biunivocal correspondence between knots of the same category (knots representing the same amount) and then evaluate the remaining knots. On the other hand, the question "How many times bigger?" involves a comparison

by quotient, where students should evaluate the ratio between their records, which is a much more complex mathematical activity that is recommended for students in fifth grade and up.

Once the students systematized their way of coding and comparatively evaluated their data, it was time to communicate the results of the work carried out. This was the objective of Session 4, where we concluded the PSMM. The session was divided between the creation of posters to present the results of each group and the presentation of their results and conclusions. In this poster, they could only include their productions through the *Püron* without adding written numbers, since the idea is that they would describe their environment, in association with the comparison of some of their productions, using the wool threads. Figure 11.4 shows the structure of this PSMM.

Once the dimensions that would be addressed in each class were created, we drew up the lines of support that we would request from the families. It was established that, at the end of each class, the students should inform their parents and/or family in general about the activities carried out in order to identify whether the families recognized the *Püron* cultural element and what they knew about it, whether they knew about its use, or whether it is still used by anyone in their daily practices. In this way, after each class, the student recreates the activity with their families, they can observe what the families know about the *Püron*, and bring that information as an input to start each new session of the PSMM. Thus, when asked about the knowledge of the *Püron* and its use, two things could happen: the family could remember, know, and use the *Püron* and validate the information generated in the classroom, or they could provide new information on how they record information or are used. If this new information was on the form of recording, we would empower the student and their group in the development of the PSMM through the knowledge they bring from home; that is, modify and adapt the coding structure according to what their family mentioned. If the new information was useful, it would serve as a basis for reflection
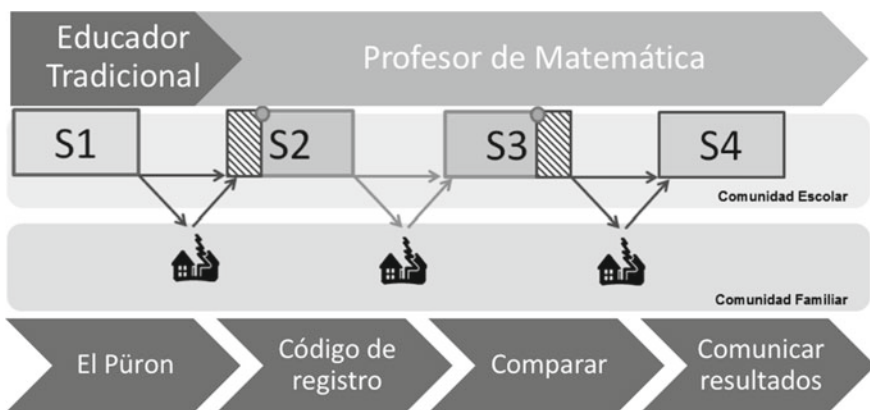
Fig. 11.4 Mapuche Sociocultural Mathematical Project (HSMS), "I Describe My Environment" (*Source* Prepared by the authors)

on the potential of the *Püron* in antiquity and its possible use in modern times. On the other hand, if the family's response is that they do not know about the *Püron* or how it was used, the activity that took place in the classroom and its correlation with the family would constitute a basis to promote interest in reviving this knowledge and thus strengthening what appears to be solely intangible cultural heritage.[10]

One of the benefits of the PSMM is that it allows the student, based on the ancestral mathematical knowledge associated with the social activities of that time, to *create* a form of record that they must validate before their peers and teachers. In this context, the answers could be highly varied and the teachers must have the necessary tools to anticipate the problems that students might face. In view of this diversity, how can students be guided within this PSMM so that there is mathematical involvement and participation? How can teacher management practices be established that forget about providing answers and instead focus on asking good questions? In order to address these questions, it was necessary to model the four sessions included in the PSMM, which was carried out in each school with the actors involved: the mathematics teacher and traditional educator. This allowed us to test each decision taken in the design of the project: how the groups would work, how would they be located, when we should go to each group and what we should observe and ask, when it was time to give an instruction, carry out reflection, or indications to the group in general, and, above all, it enabled us to conduct detailed study of the decomposition of each mathematical task and its multiple variants.

Of the tasks posed, the students in first and second grade developed a type of code created by two knots: one large one created with several small knots on top of each other (usually they used three simple knots to create a large knot representing 10 units), and a small knot, which represented one unit. The knots were positioned on the thread depending on the characteristic; that is, all the large knots were in one area of the wool thread and all the small ones in another. This means that the record is decoded from top to bottom or from left to right depending on whether the thread is positioned vertically or horizontally, respectively. In the same way, the students decided that the large knots would be read first, so when decoding, the large knots are always at the beginning[11] of the thread.

Once the decoding was established, the students recorded countable information in a range of 10 to 100, and were asked to perform some decompositions and distributions. For example, in Session 4, the objective of which was to communicate the data to describe the environment, one student responded as follows:

Student: *42 trees.*
Professor: *42 what?*
Student: *42 non-fruit trees*
Teacher: *Show me how you recorded the 42 trees with the Püron.*

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[10] It is considered intangible in the context that the ethnographic work could not find any previously recorded *püron* that could be analyzed today. We only looked at the memory of the interviewees and evaluated forms consistent with the stories to codify using the *püron*.

[11] A symbolic beginning because the threads can be taken in any direction. In this respect, all the students first identify in which position the largest knots are and start decoding.

Student: *Here 10, here 20, 30, 40 (pointing each time to a different large knot[12]), and 41 and 42 (pointing each time to a small knot[13]).*

Teacher: *Great. Let's imagine that you can take the non-fruit trees as a gift. How many non-fruit trees can each of the members of the "Kimche"[14] group take, knowing that the group is made up of 4 people?*

Student: *10.*

Teacher: *Show me with your record how they would distribute them.*

Student: *These 10 here, for Amulen, these 10 for Angelica, these 10 for Martin, and these for me (pointing to the last large knot that represents 10 units).*

Teacher: *But I see you have knots left. Pupil: The two that remain for Miss Erika.*

Teacher: *Very good.*

In this context, the form of recording allowed the 5-year old student to carry out the distribution in groups of 10 units, previously created by the need of the code, and then established a remainder that is made available to a person outside the context of the group. The form of recording and the request for distribution allow simple or natural integration of the basic concepts of non-integer division in the first grade. This example demonstrates an opportunity to integrate the division of natural numbers into the early grades (an issue not mentioned in the national curriculum) by incorporating other types of mathematical reasoning into the classroom. This shows that the PSMM has been created with the objective of developing the ability to reason mathematically based on a type of ancestral numerical code which strengthens not only deeper understanding of the mathematics involved, but also the cultural identity of the students within the classroom.

The identity of the students has thus been positively enhanced in the three schools, where first the school validates and promotes relevant mathematical knowledge built by the *Mapuche* people and, secondly, the experience invites them to recognize the knowledge that their families possess in order to address it in the classroom. In fact, the students expressed their pleasure in learning something that the *Mapuche* people had done many years ago, which was also a complex mathematical element, and mentioned how relevant the contribution was that their families made to the mathematical task proposed for them.

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[12] A knot formed by several knots on top of each other, which makes it look larger than a single knot.

[13] A knot formed by a single knot, which makes it small.

[14] *Kimche* means wise people, and that was the name the group decided to give themselves. The Kimche group is formed by students in the first and second grades of elementary school.

11.6 Challenges and Projections for the Development of Better Mathematical Learning Opportunities in Chile[15]

From the point of view of Intercultural Mathematical Education, the PSMM presented above opens up a space for discussion regarding the main challenges, limitations, and conditions for proposals like this to be incorporated into *national and regional policies*, *initial teacher training*, and *research.*

From the public policy perspective, the first challenge that emerges is related to the use of the spaces that the General Education Law (LGE) promotes. From early education and up to secondary education, the LGE includes principles associated with interculturality and territoriality in the incorporation of specific concepts of indigenous peoples, where the territory becomes important for the teaching and learning process. In this framework, it becomes possible to create plans and programs that are appropriate to the context of each establishment and which are relevant to the territory without ignoring the guidelines of the national curriculum.

In addition, the PEIB establishes spaces associated with the subject of the Indigenous Language Sector, where topics associated with teaching mathematics to native peoples can be addressed, as well as the incorporation of a traditional educator into the school.

This challenge is closely linked to that of generating better learning opportunities for all. This is related to transforming education so as not to promote an alignment between what one does and what one is, but rather a truly democratic education in which multiple skills complement or contradict each other in a space that advances the generation of new and profound categories of learning. With a greater diversity of knowledge, and the more forms and expressions of that we can find, the better the students will be able to develop their skills, abilities, and ideals based on interculturality as a citizen competency for the entire general population.

In short, the great challenge in this area is to advance towards intercultural education in all subjects of the curriculum, positioning interculturality as a cross-cutting and necessary approach to provide it with a sense of belonging to the school. This requires a long-term paradigm change, which is essential in terms of *education policies.* We must move on from theory about coverage to thinking about participation, recognition, and redistribution of knowledge as the basis for the development of inclusive policies. In this respect, recognition of the certification and validation of non-formal knowledge is fundamental for our monocultural curriculum.

From the perspective of *research*, it is essential in the academic sphere of education to understand and bring into view the ways of doing and knowing different

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[15] Several of the ideas included in this section came from the discussion that took place at the colloquium "*Educación Matemática Intercultural: el caso de la matemática Mapuche*" (Intercultural Mathematical Education: the case of Mapuche mathematics), organized by CEPPE UC, the Faculty of Education at Universidad Católica, and the Center for Intercultural and Indigenous Studies, CIIR, in which representatives of the PEIB-Mineduc and Unesco-Santiago also participated.

rationalities. This will enable us to have a framework of knowledge which we can use in order to develop diverse and dialogical teaching strategies within the school. At the same time, it is important for research to be carried out with relevance: *in* and *with* sociocultural groups.

However, one of the first limitations in this area is that interculturality is only relevant to certain aspects of the curriculum (only in the Indigenous Language Sector), in certain contexts (when over 20% of enrollment is of an indigenous background, from a single group), differentiated by ethnicity (the indigenous group is taught knowledge related only to its own group), for a certain age group (involving children only up to eighth grade), and is only related to native peoples (assimilating intercultural with indigenous). In contrast, our concept of interculturality has a dual relationship that allows better learning and processes of identification for all of those involved, whether they belong to a specific sociocultural group or not.

The lack of promotion of sociocultural models for teaching–learning mathematics and of the incorporation of forms of mathematics from different sociocultural groups into the classroom context is further limited by the measurement of the quality of our education by means of standardized tests. This produces a great deal of conflict among teachers, since they have to follow the demands of the education system, to which they can respond in two ways: they can decide to reproduce the static and conventional model associated with the content of the monocultural curriculum, or they can see these new forms of doing and knowing as a bridge that helps students to better understand Western mathematics, using indigenous knowledge (or that of any sociocultural group) in order to improve the learning outcomes established by the current curriculum.

From the perspective of *teacher training*, both initial and ongoing, and from that of the *curriculum* it is necessary and urgent to establish an inclusive and context-relevant education. The proposal for mathematical work presented here does not necessarily reflect the strategies usually used for teaching this discipline in a socio-constructivist framework, which requires generating research as a means of understanding various ways of carrying out mathematics, along with the most pertinent methods for teaching it. A greater accumulation of explicit information, coming from diverse sociocultural groups (*Mapuche, Aymara, Lican Antay, Rapa Nui,* etc.) would allow us to reformulate the curriculum, moving towards a proposal that would serve monocultural curricular mathematics, but instead support egalitarian policies in every context.

Finally, an issue that cuts across the aforementioned challenges is related to linguistic diversity in the process of teaching mathematics. The predominantly monolingual use of Spanish in the classroom affects the processes of mathematical understanding that emerge from experiences such as the PSMM. Language, as a means of expressing the knowledge of each sociocultural group, allows us to carry out explicit new ways of doing mathematics in different contexts and to enter into the intimate relationship between linguistic properties and mathematical reasoning.

11.7   Conclusions

Intercultural Mathematical Education must move on from the simple transposition of Western mathematics to collective work with elements that have significance to each social group and to the recognition of ways of doing mathematics (*situated mathematization*) that respond to logics of reasoning with meaning for that group or people. If we cannot do this, we will continue the folklorization of cultural elements in mathematics classes and this work will not result in better opportunities for mathematical learning or cultural identification. Similarly, if this process does not include explanations of the ways of doing mathematics that are particular to a sociocultural group, the curriculum will remain without changes that have an impact on opportunities for learning in a situated and profound manner throughout the national context.

IME should be included in *initial teacher training* in mathematics, which makes it necessary to understand how teacher training should be altered to provide teachers with tools to develop dynamic, diverse, meaningful, and socially relevant mathematics. Similarly, in-context inclusion of the *curriculum* and *educational policies* in the area should be relevant to the contexts of each group, moving on from the treatment of difference, as a compensatory medium aimed at egalitarian policies that modify the current curriculum.

In this chapter we have outlined a variety of challenges and projections for Intercultural Mathematical Education that is relevant, situated, and profound, and we have tried to bring into view the diverse and complex nature of the variables that comprise it. By way of summary, we highlight three key notions that challenge the current parameters of mathematical education at the national level and which provide support for proposing an *Intercultural Mathematical Education* as a source to *improve learning opportunities for all*: to promote research in mathematical elements and teaching methods that are relevant to the national context, its native peoples and social groups; to investigate how these aspects are included in initial teacher training and in the habitual practices of teachers, and to advance with their implementation; and, inter alia, to create inclusive egalitarian policies that allow the construction of an egalitarian curriculum that incorporates the ideas discussed above.

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Chapter 12
Crafts of the Earth: Dialogue of Knowledge in Intercultural Environmental Education

Guillermo Williamson and Isolde Pérez

12.1 Introduction

In schools, teaching of the natural sciences is separated from human sciences and the latter is separated from teaching of technology, as if knowledge of the natural world and technology were independent of knowledge of human society, as if work was only an objective of employability at the end of the school system, and training to understand natural and social or cultural processes followed an independent path. For example, the *Mapuche kimche* (wise people who bear the social and cultural knowledge of the *Lof Mapu* [symbolic and territorial areas], teach that if the earth falls sick, so does the human being, because humans are part of the earth and can be healed by actively deciding not to follow the current path of destruction. Likewise, this can be repaired by reviving traditional knowledge with respect to the way in which human beings relate to themselves, others, nature, and what is sacred through their intelligence, their hands, and their work; that is, through applied knowledge, both current and traditional.

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Teaching and learning about human and natural sciences, as well as about work and its related technologies (instruments of thought expressed in work), must be done in a comprehensive manner, based on a holistic conception of the curriculum and pedagogy. This involves making an effort to reunite traditional knowledge with current knowledge, human beings with nature, and technology with the evolution of the natural world. This means making a conceptual and methodological shift that raises awareness of and validates a new pedagogical paradigm for strategic curricular and educational reform: *intercultural environmental education.*

This chapter is intended to initiate a process of reflection on local environmental education with an intercultural perspective. This reflection emerges from the learning achieved in the educational experience implemented in the Tierra Viva program by the government of the Araucanía Region between 2004 and 2007. This program was based on a commitment to an educational paradigm aimed at producing integration and dialogue in the formal education system, in which environmental education and interculturalism go their separate ways. In this respect, the aim is to address environmental problems in the region by involving the school and the community through pedagogical and participatory methodologies and, above all, by collecting local knowledge and indigenous *Mapuche* and non-*Mapuche* knowledge from which contents and approaches emerge that are specific to the territories in order to respond to local environmental problems. In this framework, the concept of Intercultural Environmental Education is established, which proposes that the environmental area is an intercultural construction that is the shared responsibility of all those who share the same territory (Williamson, 2009).

The development of sustainable territories that are available for future generations and for the enjoyable learning of the present generations is currently in crisis. The dilemma of how to make our pedagogical practices relatable and to enable them to provide an answer to local environmental situations implies using innovative intercultural educational practices that make exchange possible; the revival of ancestral knowledge linked to the crafts of the earth; strengthening the link between the school and the community and the possibility of establishing an educational experience that recognizes and creates learning in different knowledge systems without neglecting the relationship with its origins; contributing to the construction of friendlier territories in social and ecological terms, based on solidary economic principles and where everyone learns from everything among everyone (Williamson, 2005).

12.2   Moving Towards a Proposal of Intercultural Environmental Education

The origins of the grave environmental crisis in which we find ourselves globally lie in an extractivist development model, far removed from sustainable practices that promote ways of living in daily life with respect and harmony, and which are in balance with everything that exists. At the 2009 Copenhagen climate conference, Leonardo Boff called for reflection on the current development model. "We are at a critical moment for the Earth, in which humanity must choose its future. And the choice is this: either a global alliance is promoted to care for others and the Earth, or we risk our destruction and the devastation of the diversity of life" (Ferrari, 2008, p. 33).

This reflection presents us with a challenge. In the model of society that we are building, it is essential to generate transformations in the educational model so that it promotes significant learning (Bolívar, 2009) in students and communities, based on the paradigm of care and respect for nature, and stimulating ecological awareness; sustainable educational practices (based on good living) and the construction of a new relationship with rural and indigenous cultures and global society, with an approach that involves interculturality.

In this context, one of the main foundations of this proposal is the concept of sustainability, which is understood as "the existence of economic, ecological, social, and political conditions over time and space. Over time, harmony should exist between present and future generations, the various social sectors, women and men, and the population and its environment." This definition was first expressed, making reference to sustainable development, in the Brundtland report, "Our Common Future", published in 1987. The harmonious situation to which the idea of sustainability refers is that it emerges not from an action external to people, communities, and territories, but from the conscience and the specific, internal, motivational, and available resources of the social actors in their connection with their spaces.

Promoting the improvement of the environment, local development, and the sustainable management of natural resources in territories requires an effort to integrate the contents and practices of environmental education from an intercultural perspective into the school curriculum, allowing the learning of children and young people to be supported by transformations in pedagogical practices developed by teachers, in dialogue with the wise practitioners of local crafts, the recognition of their role in the territories, and the strengthening of the space for and presence of the community-school relationship.

This poses a real challenge for community participation, a process that should be incorporated into formal education, specifically into intercultural environmental education, in order to strengthen the dialogue between knowledge and territorial sustainability. In this respect, Freire (2004, p. 12) contends:

> It is necessary, above all, that those who are being trained, from the very beginning of their formative experience, by also assuming themselves as subjects of the production of knowledge, to be definitively convinced that teaching is not the transfer of knowledge, but

rather the creation of possibilities for its production or construction .... He who teaches, learns by teaching and he who learns, teaches to learn.

The great challenge in which we are invited to take part is, therefore, to ask ourselves: why not expand the possibilities of knowing and learning from other knowledge, from other philosophies, from other ways of looking at the world, and participating in it? Establishing a process of training based on this perspective in formal education is a challenge and a possibility for learning, with teachers of crafts based on highly practical workshops where there is the possibility of learning with the senses, the mind, the hands, recognizing our places of origin, rediscovering the landscape, recognizing the history of the territory; complementing knowledge with current knowledge and techniques, with information generated elsewhere about the place itself. This will enable a formative and creative process that has relevance, a process that is much more complete, flexible, creative, and diverse than what is currently taught in school. As Freire says,

> There is no teaching without research, nor research without teaching. Each of these tasks lies in the body of the other. While I teach, I continue to search, inquiring. I investigate to check, by checking I intervene, by intervening I educate and I educate myself. I investigate to know what I do not yet know and to communicate or announce the novelty. (Freire, 2004, p. 14)

Approaching Intercultural Environmental Education (IEA) from this perspective means looking at life from the perspective of what it is, from the origin, from the land, the ancestors, the common and shared lineage. From this perspective, the school-community connection will contribute to improving students' learning and, in particular, to improving the sustainability of local spaces, the community, the village, the territory. On the other hand, the involvement between educational communities and the adults in the community allows a connection with local knowledge in traditional and ancestral values and in the deepest knowledge of the place and its history. It also offers the possibility of complementing traditional knowledge with techniques and information generated in recent times and which are useful for many creative processes nowadays, to expand knowledge about other artisanal techniques, to find out about and examine experiences from other places and related peoples, and to use technologies that can facilitate artisanal work and access and expand the knowledge needed to recover or create new processes or uses of raw materials that have been depleted.

Today, there are artisans who are devoted to a traditional craft, inscribed in the stone, wood, earth, or wool of the communities and territories, which survive despite the neglect or ignorance that their own people have of their value and importance. Some have managed to subsist as craftspeople by leaving their place of origin, while others are resigned to having their knowledge disappear with them, as they are unable to complete the chain of knowledge transmission, broken by the loss of apprentices or sufficient young people who want to learn their craft. In this scenario of progressive erosion of rural societies due to the consolidation of a neoliberal model that delegitimizes rationalities that differ from the modern-Western concept of reality, what stands out is the emigration or disappearance of traditional artisans or sages

who work as breeders, craftspeople, jewelers, weavers, ceramists, musicians, story-tellers, among many others. Knowledge about the place, about the use of materials such as clay, wool, leather, vegetable fibers, seeds, plants, fish, algae, sand, metals, wood and so many other things with which nature has endowed us, has disappeared with them, laying bare the excessive degradation of the environment, of food, and of ecosystems, which includes the weakening of identity, culture, and politics. Hence, Lef states that "the rationality of modernity is eating its own entrails, like Saturn devouring his progeny, undermining the bases of sustainability of life and perverting the symbolic order that accompanies its eco-destructive will" (Lef, 2004, p. 11).

12.2.1 The Context of Intercultural Environmental Education

Environmental education is emerging as a response to the environmental crisis caused by the current development model. As a concept it is directly linked to international agendas, particularly that of the United Nations. It was the United Nations Environment Program (UNESCO-UNEP, 1975) that began the International Program for Environmental Education, a subject that was later addressed in many conferences and various international agreements where efforts were made to raise global awareness of environmental deterioration, social responsibility, and alternative solutions. Similarly, an attempt was made to reveal the values manifested in human relations that contribute to the decline in the quality of life and the forms of socialization that have contributed to the reproduction of patterns of behavior related to the environmental crisis (Terrón, 2000). We will discuss the most significant

agreements for environmental education below.

It was in 1992, during the United Nations Conference on Environment and Development in Rio de Janeiro, that the Global Forum document "Treaty on Environmental Education for Sustainable Societies and Global Responsibility" was recognized. Thus, chapter 36 of Agenda 21 states:

> Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues ... It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making. To be effective, environment and development education should deal with the dynamics of both the physical/biological and socio-economic environment and human (which may include spiritual) development, should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communication. (Agenda 21, cited by Llanquileo, 2004, p. 5)

In 2002, in Johannesburg, South Africa, the World Summit on Sustainable Development took place. During this event, the various countries concluded that education is essential to achieving sustainable development. Governments committed themselves to improving and strengthening education for sustainable development in their

national strategies and action plans. In Chile, in 2009, a National Policy on Education for Sustainable Development (PNEDS, by the Spanish acronym) was defined, establishing collaboration agreements between public and private institutions and other civil and institutional actors related to this problem.

Environmental education thus emerges within the framework of sustainable development, placing a strong ethical emphasis on the challenge of providing social development with sustainability. However, although environmental education is an important aspect of achieving development, it is not the only variable that will make it possible to address such challenges.

The concept of environmental education does not solely consider the physical-biological dimension of development, but also deals with the diverse perspectives and factors that are part of the context and proposal of sustainable development. Therefore, environmental education must contribute to the construction of sustainable societies: that is to say, it is of critical importance considering the development model that includes the homogenization of productive and cultural patterns, vindicating the people and their local knowledge, implying the modification of contexts and educational proposals that facilitate the creation of a new environmental culture. We seek an educational model that is reflected in environmental participation, the development of an awareness of the human condition in the world that leads to a change in responsible environmental behavior, in people and their organizations; in short, an educational proposal for social transformation and the exploration of new forms of development and educational innovations.

Article 2, letter h, of Chile's General Environmental Framework Law 19300, amended by Law 20173, states that environmental education is defined as a "continuous process of an interdisciplinary nature, aimed at the formation of a citizenry that recognizes values, clarifies concepts, and develops the abilities and the necessary attitudes for harmonic coexistence between human beings, their culture, and their surrounding biophysical environment." As we have proposed in the preceding paragraphs, we should not forget that environmental education is an important part of the comprehensive education of society, particularly in these times when we are experiencing the effects of the actions of past generations and their ruling elites, who did not believe that natural resources would be depleted and that the Earth could die because we do not know how to care for it.

Environmental education was addressed in Chile in 2003, when the National System of Environmental Certification of Educational Establishments was established. As of 2016, there were 1,114 preschool, elementary, and secondary schools throughout the country (Portal de Educación Ambiental, Gobierno de Chile, 2017), which have implemented environmental care both in their educational methodology and in the relationship between infrastructure and the environment. The aim is therefore to establish a change in the relationship between students and the environment, so that they learn to care for and respect it, in such a way as to aspire to a future of greater environmental sustainability. However, the issue still needs to be established as a public policy and be addressed on a compulsory basis in educational establishments so that environmental issues can be incorporated into schools more actively.

At present, the implementation of environmental education depends on the efforts of teachers who incorporate the subject into activities linked to the subject of natural sciences or in extracurricular activities, but it is not a specific subject in the educational curriculum. Including environmental education experiences based on a dialogue of crafts will allow students to learn the language of harmony, balance, and consideration. It will allow us to talk about coexistence, the recognition of the existence of other living beings and other logics of knowledge, strengthening us in a dialogue that will allow us to reach agreement and be more assertive in our actions, creating rapprochement and shared dialogues at a territorial level. Environmental education must thus contribute to the construction of sustainable societies: that is to say, it has to take on a critical role regarding the development model that includes the homogenization of productive and cultural patterns, vindicating peoples and implying the modification of contexts and educational proposals to facilitate the creation of a new environmental culture.

From the ethical point of view of environmental education, it leads to a cultural change based on new forms of social coexistence, where the cultural components of environmental problems are recognized and we promote the capability to interpret, analyze, and propose solutions to environmental deterioration. Therefore, the approach must be through specific strategies that take into account the context in which the action is taken, and which are directly related to the improvement of the quality of life of people and communities.

12.2.2 Differentiated Cultures

Understanding a society and its systems of educational relationships, which generate linguistic forms and codes and whose main function is to transmit the culture of a given social group, also conditions the behaviors and ways of thinking of individuals in a particular way. On the other hand, the use of memory in native peoples, as an oral record that participates in the transmission of information and knowledge, promotes collective thinking based on observation and experience as learning mechanisms, and on practices that are rich in meaning. This is evidence that written language is not the only valid means of cultural transmission and of the importance of linguistic codes supported by unwritten formal daily relationships and practices.

There are cultural differences that are present in our current reality, such as that between positivist scientific culture and traditional cultures. The former was established as the most powerful intellectual current in Western thought during the second half of the nineteenth century, and it is characterized because the essence of man's activity is the mind, the thinking being that excludes the body. Therefore, valid knowledge is that which is based on observation and experimentation in an objectified reality which looks at nature as being external to the individual (Terrón, 2000).

In traditional cultures, participatory awareness is paramount. They are distinguished by being socio-centric and ethnic thinking is closely linked to action, to

objects, social relationships, and forms of concrete symbolism, which are characterized in non-linguistic terms. They are oral cultures that favor a sort of non-verbal communication, that generate forms of thought incorporated into action, ritual, and symbolism whose meaning is particular and has significance for the group or collective itself.

These differences between language decoding systems lead us to different models of social organization such as the indigenous one, which prioritizes the assimilation of each individual into the group or collective, unlike Western culture, which makes communicational expressions of language a form of individualization and personal differences (Berman, 1987). Each human group understands a certain language of nature and creates its own interpretations, which receive feedback through cultural practices such as agriculture, fishing, or harvesting, among others. Escobar (2010) argues that the model constitutes a cultural code for the appropriation of the territory. This appropriation implies elaborated forms of knowledge and cultural representations of "an original cognitive universe" (Losonczy, cited by Escobar, 2010, p. 140) that it is possible to know and understand according to one's own cultural definitions.

12.2.3 Representatives of Craft, Knowledge, and Identity

In pre-Hispanic times, different indigenous peoples and peasant cultures developed significant knowledge about traditional crafts based on their link with nature, the management and domestication of species with different criteria, and adapting them to different environments.

For centuries, indigenous peoples and rural workers have listened to the voice of the land and they have maintained the conviction that, more than a century ago, was expressed by Chief Seattle of the Suquamish tribe, in his now famous letter to the President of the United States of America, when he proposed to buy their lands: "We are part of the earth and it is part of us. The perfumed flowers are our sisters. The bear, the deer, the great eagle, these are our brothers. The rocky crests, the dew in the meadow, the body heat of the pony, and man all belong to the same family" (Chief Seattle's letter to President Franklin Pierce, 1854). Thanks to this vision, 90% of the world's most biodiverse lands are now managed by farming communities and indigenous peoples.

There are practices, knowledge, and forms of relationship with nature, knowledge systems developed by traditional sages, specialists; this knowledge being holistic, integral. This special sensitivity is present in the elderly and also in people who are knowledgeable about the surrounding ecosystems and their biodiversity, which also maintain a strong cultural base. They are the ones who maintain the rituals of cultural tradition in relation to plants, as well as an accumulation of knowledge about their ecology, their effects, and their rules of use.

In the processes of cultural reactivation, the role of specialists in the territories is of fundamental importance, since they are the ones who have conducted meticulous and silent work that has allowed the conservation and recreation of the use of diverse

elements of nature, which, transformed into artifacts of daily use, form part of the cultural and ecological heritage of indigenous peoples and rural groups.

In fact, the knowledge available today can be traced from the present back to ancestral memory, going hundreds or thousands of years into the historic past of the communities where it is manifested today. The processes of knowledge production and its organization into communicable knowledge are not the heritage of modernity or the scientific method, they are a condition of human beings throughout their extensive, complex, consistent evolution towards their humanization in the territories and times of historical development of their existence and the knowledge that allows it. Traditional knowledge has been the source of current knowledge and, as with all processes of human construction and creativity of cultural meanings and objects, it is built on the previous knowledge of communities in their dialogue with themselves, with other communities, with nature, and with the sacred, in the same act of social and cultural relations.

At present, traditional community knowledge systems led by traditional specialists have become weakened. They can be strengthened through the reactivation of the complex and diverse knowledge systems involved, including the ecological scientist who can contribute a comprehensive and participatory approach that strengthens the ecosystem-based view and the biological, productive, and cultural dimensions of the territories. According to Celis (2003), for the subjects born into these cultures, nature has deep meaning and it gives meaning to society. The relationship with the place, the construction of knowledge around the place of origin and where life takes place is a constituent part of this concern for the territories. Thus, all cultures have assumed different forms and applied diverse knowledge in their relationship with places and in the development of specific practices.

12.2.4 The Research Proposal: Crafts of the Earth, Intercultural Dialogue in the Territories

Long processes of (social) knowledge production and organization, of cultural resistance in short, have allowed the existence of peoples, their knowledge, and their ecosystems. Strategies must therefore be sought to promote interculturality where it is not intended "to begin plural and end up homogenized," but to remain plural and where the wealth of wisdom in traditional indigenous knowledge plays a leading role (Argueta, cited by Pérez, 2004, p. 45).

In these strategies that promote multiculturalism, we must discover the cultural diversity that exists in each society, seeing each individual not as a product of a particular ethnic culture, but instead highlighting what unites individuals rather than what separates them, while recognizing difference as a potential contribution to a common cultural conception and practice agreed by all.

According to Essomba (1999), the starting point that should be adopted is becoming aware that one belongs to a solid cultural reality, which means that there is

a certain orientation in the construction of meanings that give significance to social action. This is a basic aspect, since it allows one to value perspectives that differ from one's own and it gives interaction a more symmetrical nature because communication occurs through mutual understanding. Cultural heritage is the key to a people's identity and, as a consequence, by producing a close relationship between the subject and what they learn and do and their place of residence, their self-esteem is increased and this helps keep people in their place of origin. The territorial development approach is a catalyst of processes of revaluation of heritage and revitalization of traditional knowledge systems, which will later allow work alternatives to be created in the territories.

By considering indigenous and Western knowledge, it is possible to build a necessary dialogue (meaning exchange and articulation) between science and technology, and knowledge and knowhow without prejudice or mutual subordination, regardless of their origins in one or another community or whether they are reconstructed from mutual relationships.

Argueta (1997) proposes that this should not be an integration of knowledge, although an enriching process of mutual appropriation may occur, but rather a synthesis of each wisdom by itself. Creating the conditions for intercultural dialogue between knowledge and traditions is the primary task. If not, the same discourse of years past will continue to be addressed, consisting of demands for the recognition of the existence of non-Western wisdom.

Wisdom is deposited in these knowledge systems that can contribute to the design of sustainable development strategies, not only to strengthen rural and indigenous communities and their systems of autonomy, but also to solve the problems of poverty that exist in the rural world today.

In this context, the Escuela de Artes y Oficios (School of Arts and Crafts, SAC) was developed, which made it possible to gather and systematize a training experience in traditional crafts as a living heritage of traditional *Mapuche* knowledge, which can be a source for a science curriculum based on the new paradigm of intercultural environmental education.

The methodological proposal of this study is based on and collects elements of the experience of intercultural environmental education of the School of Arts and Crafts of the non-governmental organization (NGO) Cet Sur, the Center of Education and Technology for the Development of the South (www.cetsur.org), a nonprofit civil society organization based in the Biobío and Araucanía regions that aims to build sustainable cities in southern Chile. The initiative, carried out between 2004 and 2011 with young people and adults from rural organizations in the Araucanía Region, emerged with the aim of vindicating training with technical, ethical, and political components, based on the strength of the pairing between a master and an apprentice as an alternative for training, work, and the reactivation of sustainable localities for a segment of the population that is marginalized from conventional academic structures (Mariangel, 2011, p. 5).

The problem to be addressed is based on the continuous impoverishment of the countryside, the loss of food sovereignty, the progressive industrialization of food production, and the introduction of transgenic foods (Mariangel, 2011). These

contents framed the institutional objectives and the challenge of creating a proposal that contributes to weaving the social fabric of organizations in the territories and mobilizing action that generates awareness in civil society as a body with power. From this perspective, the notion of rural autonomy takes precedence and stimulates the search for "alternatives of production that maintain autonomy and dissociation from the world market system. Practices that revive cultural elements, values, and knowledge of doing and thinking of our people and their places" (Memoria institucional de Cet Sur, 2003, p. 6).

12.2.5 Purposes, Premises, and Objectives of the Intervention

- Purposes
  - The construction of a coherent and consistent approach to food sovereignty based on the cultural matrix of the peoples.
  - Networking with institutions and organizations of the rural and indigenous social movement to promote food sovereignty and autonomy.

- Premises
  - Promotion of the fundamental objective of agriculture as a producer of food and a provider of rural autonomy.
  - Construction of a coherent and consistent approach to food sovereignty based on the cultural matrix of the peoples.
  - Networking with institutions and organizations of the rural and indigenous social movement.

- General Objective
  - To organize a School of Arts and Crafts for localities in regions VIII and IX[1] by revitalizing traditional food and production cultures and linking them with strengthening the social fabric of the participating localities.
  - To strengthen the social and economic fabric of rural localities in the south of Chile and to preserve their natural and cultural heritage.

- Specific Objectives
  - To organize and articulate the contents and methods of training in arts and crafts for peri-urban and rural localities, based on the revitalization of traditional food cultures.
  - To create opportunities for ongoing training for young people and adults in rural areas, guided by strengthening territorial production chains that are connected with cultural production, the food sector, tourism, and environmental management.

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[1] Currently called the Biobío and Araucanía regions, respectively.

– To integrate traditional or local knowledge and modern knowledge in the training of crafts, highlighting the contribution of local experts.
– To improve pedagogical management and educational conditions and the development of skills in the training of adults in rural and peri-urban localities by diversifying the educational offering for the non-public population of formal education programs.
– To revitalize traditional food and production cultures. through the implementation of a school for vocational training in arts and crafts in rural locations in the Biobío, La Araucanía, and Los Lagos regions.

The design of an SAC as a contribution to the sustainable development of localities in the south of Chile became feasible after the presentation of two specific proposals with two years between them. The first, called "Escuela de Artes y Oficios para el Sur de Chile" (School of Arts and Crafts for the South of Chile), a strategic component of the "Programa Recomiendo Chile: Programa de Investigación y Difusión de la Culinaria de Chile" (I Recommend Chile Program: Research and Dissemination of Chilean Cuisine), was presented to the Avina Foundation in 2004. It is currently being broadcast on a television channel. The next proposal, called "Implementación de una Escuela de Artes y Oficios para el Desarrollo de Localidades Sustentables del Sur de Chile" (Implementation of a School of Arts and Crafts for the Development of Sustainable Localities in Southern Chile), was presented to the European Union in 2006. During this period a Strategic Planning Model was developed, called the Viable Systems Model, which, in addition to proposing the reorientation of the processes to implement the SAC, attempted to carry out the institutional development as a whole, proposing adjustments in the execution of each of the initiatives (Informe de Sistematización EAO, 2011).

The experience in the Araucanía region was implemented in 10 districts through the crafts of Traditional Cuisine, Curators of Seeds, and Breeders of Blue Eggs (*Mapuche* hen).

12.2.6   SAC Methodology

The principles of the methodology were based on the restoration of traditional links for the reproduction of knowledge and innovative, but culturally viable, productive practices. It therefore recognizes anonymous specialists in the territories, who recreate a type of knowledge passed down through the generations. In this way, the value of local knowledge and of the specialist is demonstrated in a process of oral transmission of knowledge that is important for ecological and cultural sustainability. Knowledge dialogues were carried out as a form of resistance to vertical interventionist models, exemplified in the relationship of exchange of culinary knowledge or between seed curators. A similar project carried out by the National Institute of Employment (INEM) in Spain, through its Workshop Schools and *Craft* Training Centers (Escuelas Taller y Casas de Oficios), run by the Ministry of Labor and Social

Affairs, with financing from the European Social Fund since 1997, was accepted as a reference model. The model involves organizing and articulating the contents and methods for the training of crafts in four areas: Crafts and ecology, Agri-food crafts, Arts in nature, and Local communication arts. In this respect, it should be explained that, although there are similarities with the orientations of the Workshop Schools and *Craft* Training Centers in Spain, the discourse around the SAC from Cet Sur—unlike the Spanish model—prioritizes a territorial development approach where the SAC participates as a catalyst of heritage revaluation processes and revitalization of traditional knowledge systems.

12.2.7   Learning from the SAC Experience

It is important to stress that, at the level of training proposals, the SAC was able to reframe and adapt traditional and conventional training models, contributing methodologies and didactics to the history of institutional intervention.

The redefinition of the teaching–learning process has made it possible to gradually expand the implications of a training process aimed at adults, the profile of whom included: (a) the accumulation of knowledge of high cultural value that was not always recognized, (b) significant reading and writing difficulties, (c) low levels of self-esteem, (d) greater appreciation of local knowledge versus technical and/or scientific knowledge.

As the experiences continued, support was incorporated from popular education and andragogy, that is, the art of teaching adults to learn (Fasce, 2006, p. 68), which made it possible to deal with variables that were not initially considered. Thus, diverse methodologies were included that had to be prepared according to the needs of each group of learners or training experience. This implied, for example, advancing in the recognition of content-based planning processes versus goal-based processes, with significant achievements made at the level of knowledge, procedures, and attitudes.

Looking at each of the experiences developed, we can recognize differentiated training strategies: centralized workshops with specific internships in rural areas, workshops with experts and centralized sessions, and farmer-to-farmer training (Informe de Sistematización EAO, 2011, p. 64).

12.2.8   Intercultural Environmental Education as an Educational Paradigm

Intercultural environmental education is a proposal that integrates two areas of knowledge generated from the growing mobilization of civil society for human rights to a quality and healthy life in a safe and sustainable world.

Following Williamson (2005, 2009), firstly, with regard to the environment, the ecological, environmental, animal protection, anti-GMO, fair trade, and many other movements have raised concerns about the fate of the planet in various world forums. Human life is at risk because the capitalist system and humanity in general continues with an economic, social, and cultural model built on unlimited economic growth, immediate and extensive depredation of natural resources, insatiable consumption generated by a market that creates needs that are dissociated from simple and communal life, and lack of concern for a healthy and spiritually satisfying life that is psychologically and physically in balance and harmony with the natural world. This requires urgent decisions to be made about care for the natural and cultural environment.

Secondly, with regard to interculturality, civil rights movements, indigenous peoples, groups defending sexual minorities, special skills, cultural life options, beliefs, and individual differences have confirmed the importance of diversity and the right to difference, multiculturalism, and interculturality with diverse and sometimes conflicting notions between them. Over time, environmental, diversity, and intercultural issues have been adopted by international organizations, governments, academics, and educators, as well as by international conventions that support rights and improve understanding of the problems, challenges, and projections of humanity and societies.

These themes are slowly beginning to permeate the formal education of society: the school system, the school, its curriculum and pedagogy, its assessment and management systems, and its establishment in the territory.

In the urban and rural curriculum, a challenge for scientific disciplines, and for all those that are taught and formally learned in general, is that of integrating these environmental, intercultural, and diversity dimensions into the same pedagogical act of learning. It is also necessary to develop meaningful learning, recognizing the knowledge established in the collective memory of families and communities that have made up the cognitive and cultural base of students in order to address new knowledge with origins and languages very different from those of their communities and families.

It is in this context that Intercultural Environmental Education (IEA) is presented as a new paradigm for the educational system and particularly for the curricular and pedagogical development of schools. Considering the official curriculum, this is a paradigm that.

> implies an option with ethical consequences for the human being's position in the world, which reflects the fact that we are part of it and not that it belongs to us; it implies a deeply ethical vision of the relationships between cultures and between human beings, with nature and transcendence, which forces us to assume that the only thing that leads to progress in environmental education today is to adopt interculturality, as a field of coexistence, dialogue, and cooperation between approaches, languages, paradigms, knowledge, diverse knowhow, constructed in different times and historical contexts, particularly—but not uniquely—based on the global and the indigenous. (Williamson, 2009, p. 154)

It is necessary to reorganize the relationships between the school community and the local community towards a territorial perspective, so that it is possible to conceive the school, in terms of its sense and action, in the context of a

> territory of intercultural learning: it is in this, with all of its dynamics of social, cognitive, ethical, and spiritual formation, where it will be possible to educate and contribute to solve the environmental problems of the community, the district, the region, the country, and the planet. (Williamson, 2009, p. 154)

In this area, communities' traditional crafts can contribute to school teaching, to the curriculum in the area of science. In the fields, in the communities, rural workers, craftspeople, fishermen, cooks, ceramists, weavers, singers, and other members of social spaces with a rich cultural life continue the daily tasks of maintenance, protection, development, dissemination, and consumption of technology, arts, and popular and indigenous sciences in the privacy of their homes, in their gardens, workshops, kitchens, on the coast, through their specific work: their crafts, which continue the cultural production of the peoples, communities, and urban and rural families of indigenous, creole, and colonist descent, as a living act of memory.

These traditional crafts have (very rarely) been described in the literature for many years, both with respect to their production and as a family or community expression.

The Jesuit missionary Campos stated in 1957 that, in Nahuelbuta: "we must greet and say something nice … to the 'malguenas'[2] who are clearly busy with maternal chores or are peeling potatoes, or weaving blankets, braiding the hair of a little girl, grinding wheat on the stone", (Campos, 1972, p. 149). In Chiloé, Pedro Ñancúpel, before being executed in 1888, recalled: "In all the time I lived in Guaitecas, I also learned from old sealers how to work with skins, selling them or exchanging them with local merchants" (Marino, 1989, pp. 18–19). Ignacio Domeiko describes a series of crafts that he observed on a trip to Araucanía in 1845: agriculture, horticulture, livestock raising, work with clay or wood, weaving, dyeing, silverwork, tanning, and the production of leather products (Domeyko, 1846, pp. 51–53). In the 1970s, Dannemann studied folk crafts, which he defined as: "production behavior of a community character, using any raw material and employing traditional techniques of strong empiricism and manuality, without industrial organization or systematic learning process, and whose representative condition is strongly based on its regional typification" (Dannemann, 1975, p. 15). The country's folk crafts, according to the author, are based on raw materials: minerals such as stone, clay, plaster, colored earth; animal materials such as cow horns, horse or cattle bones, sea shells, leather, feathers, horsehair, wool, plant materials such as wood, wicker, cactus wood, vegetable fiber, pumpkin, fruit, paper, cotton thread, and others not natural but synthetic, such as nylon and Tampico fiber, clothes such as silk and velvet (Dannemann, 1975). Today we are rediscovering that silent, mainly female craft of conserving the seeds of the peoples, which is characteristic of seed curators: in germination (the beginning of the craft), growth, and flowering (the art of making), when the seeds rest or sleep, *trafkintü* (exchange), and dissemination (consumption at the table) (Peralta & Thomet, 2013).

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[2] Indigenous women.

In these narrative descriptions, various qualities of different crafts are expressed. Some domestic crafts are associated with everyday life in the home, others are learned and developed with the aim of selling the products at market, while there are also crafts for decoration. But this is a false division, because in the world of the indigenous peoples, farmers, or fisherman, they do not distinguish between domestic production (use and self-consumption: "*para dentro*" [for inside]) and that for the market (for exchange or commercial sale: "*para afuera*" [for outside]). Everything is part of the same integrated, integral, interdependent, diversified way of life. The notion of artisanal production of crafts as an activity that is exclusively individual is also false. All production of objects, for domestic or market purposes, carries a personal dimension (ability and creativity of oneself) and a social one (with meaning and benefit that goes beyond the individual). It is, on the one hand, an expression of a collective endeavor that sometimes includes the long history of accumulation of knowledge and, on the other, its realization itself involves exchanges of knowledge and cooperation between those who produce the objects, as well as contributions from the work of other members of the communities (for example, from those who extract, process, or produce their raw materials). The crafts have some specificity that goes beyond the work with the exclusive objective of domestic use, although, in practice, this has been a mode of resistance of the traditional culture in relation to the hegemonic culture of the capitalist market. In the 1970s, crafts were characterized as an activity with continuity, intensity, and a degree of professionalization and commercialization, with groups or cores of members united by the same economic purpose, use of traditional techniques and the general production in terms of motives and forms, forming folkloric craft centers. Individual craftspeople who are part of groups that commercialize their own creations can belong to this category (Dannemann, 1975, pp. 49–50).

Today, the social function of the crafts is understood in a perspective of cultural resistance, of security and sovereignty of society, of reconstruction of social community relations, of integration of the various dimensions of human life and its relationships with nature.

In this regard, Peralta and Thomet (2013, p. 30), in the publication *Curadoras de Semillas*, state that the curators of seeds, who perform the art of conserving the seeds of the peoples, are considered cultural patrimony and are an example of specialists capable of maximizing the visibility of the seeds and their meaning, as well as of enhancing their plastic and expressive values, creating the most appropriate conditions for a productive reception by other farmers, so that they can create a rich and varied repertoire of agriculture that combines food, medicine, decoration, and protection, training the new generations and the general public in the values of respect, reciprocity, persistence, and conservation of an agri-food heritage that currently sustains the territories.

These crafts establish a deep cultural link between human work, intelligence, manual skills, the sense of life, and local technological and social memory, and nature, which provides raw materials, colors, flavors, and forms. These are aesthetics that are offered to human beings for their transformation, use, and enjoyment, but which they also discover in themselves by being part of it. The traditional crafts reintegrate and

unify human beings in their cultural, natural, and spiritual dimensions. The crafts have varied over time, as we have shown, but they have also remained an essential human activity for personal, family, and local community development and have persisted, adapting to the times, reproducing themselves in each territory, and resisting in each community or family, expressing the deep unity between humans, nature, and what is sacred. Knowledge, knowhow, and culture in general are resignified under this approach in intercultural environmental education.

These crafts have developed over time and until the present day in the territories where schools have been established and they have been learned, being passed down from generation to generation, in the informal and systematic educational processes that take place in families and communities. In this way of relating to nature, with the deepest sense of human work that integrates survival, sociability, and spirituality, the ecological, holistic, and harmonious approach that combines environmental and intercultural education is asserted.

The training of children, young people, and adults in traditional crafts that are characteristic of a territory is based on their deep knowledge and everything that this implies: existing ecosystems, sociocultural relations, complete knowledge about the history of the territory in various areas such as the sociocultural aspect, food, production, and the relationship with nature. These elements provide significant learning and pave the way for interculturality that is established as a dialogue of knowledge. It is here that social and historical dynamics are developed in which people who are part of the territory and who participate in training in crafts learn through multiple processes of training in various technical and socio-political areas.

In the case of education for young people and adults, "learning implies reconstructing established cognitions and cultural contents, often as common sense or social representations as totalities of knowledge in their social views that guide the decisions and practices of individuals based on their available cognitive and cultural baggage" (Williamson & Pérez, 2011, p. 12).

For adults and young people, within the framework of their popular or indigenous culture, knowledge is established in a holistic manner. For this reason, the work proposal that we present "School of Arts and Crafts for the South" promotes the integration of contents and activities to be developed based on the traditional concept led by female experts in the crafts, who are responsible for teaching or reproducing the craft according to their knowledge. This knowledge and these practices are complemented with face-to-face technical workshops based on scientific perspectives, and political, cultural, and methodological concepts of the craft.

One learns—both the master and the apprentice—in social relationships of specific learning that are manifested in the formative experience of cooperation, self-management, autonomy, and mutual support in the learning process, expanding the categories of thought and cognitions available in the personal and collective memory of the participants (Williamson & Pérez, 2011, p. 11).

12.3 The Methodological Proposal for the Integration of the Crafts as a Learning Strategy

12.3.1 Fundamental Values of the Methodological Proposal

The fundamental values are those that guide the development of the craft and strengthen generic competencies in the educational and scientific-technological training process from a critical, experimental, and entertaining perspective. The main ones are the following:

Teamwork: it provides each participant with skills that help them interact with their peers, while providing them with abilities to build, discover, transform, and enhance their learning, as well as to fully socialize with the people around them. Learning by observing and guided by a master of the craft allows us to become aware of the ancestral knowledge in the practice and experience of that craft. On the other hand, the complementarity of scientific knowledge allows the exchange of ideas, greater analysis and discussion of the subject that is being developed and, therefore, greater conceptual richness in practice of the craft.

Collaborative work: this allows the participants to develop skills to work in teams (socialization), where they must share resources, achievements, and goals. Individual success depends on the success of the team. On the other hand, responsibility is encouraged. The participants are responsible for the proportion of the collective work that is assigned to them, which means that those participating in community work remain involved with the task assigned until the end, supporting each other in times of difficulty.

Effective communication: presenting and sharing the relevant information gathered allows the participants to support each other efficiently and effectively and, in turn, to give each other feedback in order to optimize the work entrusted to them, analyze conclusions, solve problems and, through reflection, seek to obtain better quality results, as well as develop effective leadership and self-confidence. On the other hand, assessment and self-assessment must be continuous; each work community must assess its performance, in terms of both their successes and failures, in order to correct them in the next task to be solved.

12.3.2 Phases to be Considered in Teaching a Traditional Craft Based on an Intercultural Environmental Paradigm

The methodological proposal for the Intercultural Environmental Education that is proposed includes a series of propositions resulting from the research done on the Master's Thesis in Education, specializing in Environmental Education: "Ecosistemas Mapuche, Diálogo Intercultural para la Educación Ambiental Intercultural en

la Araucanía" (Mapuche Ecosystems, Intercultural Dialogue for Intercultural Environmental Education in the Araucanía Region" (Pérez, 2004). The research proposes a methodology to address environmental education through a dialogue of knowledge (an intercultural perspective) both for formal education and for the education of young people and adults in non-formal education. The methodological phases are presented in Table 12.1.

It should be noted that the revival of crafts in a certain territory is particular and specific to that territory. The art developed through the crafts from a territory will be expressed in a socially different way to conceive what is local, paving the way for the recognition of diverse forms of expression as part of the cultural heritage of the people. In this way, the value of local knowledge and of the craftspeople is demonstrated in a process of oral transmission of knowledge that is important for the ecological and cultural sustainability of the territories, as well as with regard to its impact on their economies. Based on this, intercultural encounters are deepened within the approach of the dialogue of knowledge types as resistance to vertical interventionist models. It is thus possible to enrich the curriculum and pedagogy of the school system, but, above all, to review the meaning of the school for the territories and their democratic and harmonious development.

12.4 Conclusions

Throughout this chapter we have presented the results of field research into the crafts in the territories and their consequences for a curricular area of intercultural environmental education associated with the subject of sciences. The intercultural environmental education approach is proposed as a pedagogical paradigm that can gather, integrate, and develop curricula for traditional popular and indigenous knowledge of crafts in various disciplinary areas, particularly in the sciences. We outline the need to carry out systematic and participatory research work on the crafts carried out in the territories and, based on the discoveries made, to reconstruct institutional educational projects according to a new construction of the relationships between the school and the community, in accordance with the encounter between traditional and modern knowledge, the popular and indigenous world, and the official curriculum and the wise people, *kimches* or specialists in the communities with the teachers who are the specialists in the knowledge of the schools.

Understanding the sciences as positivist—which is how they are currently seen in the curriculum—does not allow us to gain an in-depth understanding of this approach that is based on the meanings that the working world does not necessarily entail: tradition transmitted from generation to generation; learning that creates knowledge from the popular, peasant, and indigenous spheres as processes, sources, contents, and pedagogies for understanding the world; the idea that the territory is where the relationships converge between human beings and nature, and transcendence as the great laboratory of humanity for creating knowledge. Sustainability in an intercultural context allows knowledge to be recreated and, through the crafts, cultures and

Table 12.1 Phases of the intervention

Processes	Contents contributed from traditional knowledge	Contents contributed from the Western scientific world	Methodology
Identification of crafts in the territory from a systemic perspective	Recognition of the territorial identity of the place Traditional crafts present in the territory	Maps with territorial units and their historical characteristics	Recognition of local specialists as drivers and trainers of the process through *Nütram epeu*[a] (promoting oral knowledge)

(continued)

Table 12.1 (continued)

Processes	Contents contributed from traditional knowledge	Contents contributed from the Western scientific world	Methodology
Reactivation of Communities' Historical Memory	Reactivation of the cultural function of the place (revival of rituals for social spaces of coexistence, rituals in relation to nature	Identification and analysis of the territory, through the different processes that have taken place in its history: past, present, and its projection using social cartography: Identification of ecoregion, site, composition and vegetational units Map with ecosystems: forest, medicinal plant reserves, food products, water reservoirs Maps with areas of critical water deficit Map with identification of sites of cultural resignification (sacred, symbolic places) Map that identifies the social and cultural life in the territory and the role of traditional practitioners	Knowledge exchange workshops from the perspective of ancestral knowledge and Western knowledge with the participation of traditional wise people or practitioners of crafts. Identification of ecological spaces from the traditional perspective, visits, and reconnaissance of the territory by interdisciplinary teams
Symbolic recovery of the territory. Conception of community, meaning or re-signifying practices according to the crafts identified or to be developed	Revival of knowledge systems and conception of spaces. Identification of sacred spaces. Reactivation of uses	Holistic approach to the territory. Revival of craft practices according to historical memory Activities to revitalize the craft Action plan that links with the community	Organization of intercultural practices according to the characteristics and history of the place Activation of practices and relations of coexistence with the environment (collective social activities, activities and exchange, collective support such as *mingakos,*[b] *palines,*[c] *rukatún,*[d] exhibitions, parties, meetings)

Table 12.1 (continued)

Processes	Contents contributed from traditional knowledge	Contents contributed from the Western scientific world	Methodology
Ixofilmogen[e] Balance between Man and Nature (balance of lives)	Experience of principles, regulated by *ad maput*[f] of the *lof*[g] according to the craft. Relations of reciprocity. Rights and responsibilities in communication with nature Territorial control	Recovery of the capacity for resilience of the craft. Revival of the craft from a systemic perspective Agreements for coexistence and the recognition of legitimate differences	Organization and discussion of agreements for conflict resolution, for dynamic conservation Contributions with intercultural monitoring systems

Source Pérez (2004)

[a]*Mapudungún* phrase for oral accounts transmitted from generation to generation.
[b]*Mapundungún* term for collective work.
[c]Term for a traditional *Mapuche* activity for religious or sporting purposes, similar in some respects to field hockey.
[d]Term for a ceremony to inaugurate a new *ruka*, or traditional dwelling.
[e]Term for the biodiversity of a territory.
[f]Term for the set of ancient traditions, laws, rights, and rules governing behavior in *Mapuche* society.
[g]*Mapundungún* term for the basic unit of social organization of the *Mapuche* people, consisting of a familial clan.

languages are maintained and evolve, as well as specific knowledge which simultaneously allows territories to develop without the need for all of their cultural production to be commercial. This is not dissociated from the history of the territories, it revives traditional practices and technologies with strong components of meaning and of the preservation of the ecological spaces necessary for social and cultural production and reproduction. It is not a matter of experimenting to create general laws, it is a matter of understanding the meanings that human beings generate based on critical reflection about what they live and experience in the world through the generations and what they consider to be good for life, since it carries with it a profound ethical dimension. Reviving this knowledge, converting it in schools within the school, creating spaces so that those who master a craft can teach it to children, young people, and adults, in their local communities, in their families or schools, is to form a new awareness about human relationships with nature and what is sacred, with knowledge and its expression in knowhow, with creating a good life that is capable of forming good people who use their work to produce what a harmonious society requires in order to achieve fair development for all and enjoyable, quality education with equality and diversity, which preserves language and culture and revitalizes and updates them, enabling intercultural dialogue between a diversity of languages and cultures. Innovative science teaching in schools, based on principles of intercultural environmental education, is not only a condition for expanding the cognitive and cultural fields of students and their families, but also for the sustainable, endogenous, and local development of the territory.

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