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Writing Our Futures: Cultivating Biliteracy Practices with and by Preservice Indigenous Teachers

A Dissertation submitted in partial satisfaction of the requirements
for the degree Doctor of Philosophy

in

Education

by

Zaynab Amelia Gates

Committee in charge:

       Professor Sherice N. Clarke, Co-Chair
       Professor Alison Wishard Guerra, Co-Chair
       Professor Theresa Ambo
       Professor María José Aragón
       Professor Silvia Hirsch
       Professor Nancy Postero

2023

The Dissertation of Zaynab Amelia Gates is approved, and it is acceptable in quality and form for publication on microfilm and electronically.

University of California San Diego

2023

Dedication

With admiration and gratitude
to the memory of Martín Zamora,
Octorina Kajianteya,
and Marta Zamora

Epigraph

Jwala ta i'sí,
I'nam'lá.
Jwala ta Wichí i'khoyenla,
I'nam'lá.
Hálai lhawolh,
I'nam'lá.
Wahát hwai,
I'nam'lá.
Atsinay khates hway.
Jwalas ná.

Lecko Zamora (2018)
Wichí poet, writer, artist

Bright days,
they will come.
The days when the Wichí will dance,
they will come.
The flowers from the trees,
they will come.
The time of the fish,
it will come.
It is the time of the women-star.
It is now.

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List of Abbreviations

CoBi   Continua of Biliteracies Framework

DBR   Design-based research

NLS   New Literacy Studies

IBE   Intercultural Bilingual Education

ITEP   Indigenous teacher education programs

RPP   Research to practice partnership

List of Symbols for Transcription

[ ]   Items within are clarifications added by the researcher, actions, or translations

/ /   Phonemes, all symbols used are from the International Phonetic Alphabet

⟨ ⟩   Letters

Acknowledgements

This research is both the end of a ten-year period embarked on the doctoral journey and the start of new adventures. There are so many people to thank who influenced and inspired me.

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It takes a community to train a researcher. I want to acknowledge EDS Professors Shana Cohen, Amanda Datnow, and Christopher Mamas for your thoughtfully designed methods courses. Professor Thandeka Chapman, thank you for building a writing community with your courses encouraging peer feedback, and the deeply moving experience of the critical race theory course. Professor Mica Pollock, I appreciate your abundant and detailed

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RESEARCH

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ABSTRACT OF THE DISSERTATION

Writing Our Futures: Cultivating Biliteracy Practices
with and by Preservice Indigenous Teachers

by

Zaynab Gates

Doctor of Philosophy in Education

University of California San Diego, 2023

Professor Sherice N. Clarke, Co-Chair

Professor Alison Wishard Guerra, Co-Chair

Recent studies have projected that by the end of this century between half and up to 95% of the linguistic diversity in the world will disappear or become severely endangered. In the last four decades, the Latin American region, home to more than 500 Indigenous languages, has introduced intercultural bilingual education policies aimed at protecting

Indigenous children's right to learn in their mother tongue and contributing to language revitalization. Yet, little is known about how to meaningfully teach biliteracy competencies that simultaneously fulfill the goals of Indigenous cultural revitalization and strategic economic and political participation in national society. Centering the voice of Indigenous language teachers and preservice teachers, drawing from the continua of biliteracy framework, and building on an on-going research partnership, this design-based research (DBR) study was implemented to reflect on teaching biliteracy practices in Spanish and Indigenous language (Qom and Wichí) courses at teaching institutions in Northern Argentina.

Data were collected during 24 weeks in 2022-2023, includes storytelling interviews, video recorded classroom observations, student group interviews, co-design sessions, fieldnotes, and artifacts, which were coded employing a deductive codebook. Findings showed how Qom language teachers have become biliterate by their own efforts, in an interplay of adversity and resilience, developing a teaching approach centered on nurturing Indigenous identities. Their teaching is shaped by previous experiences alphabetizing adult Qom speakers or Spanish early literacy methods which do not correspond with their current students, Qom young adults increasingly preferring Spanish. Current biliteracy practices identified showed the need to expand and incorporate best practices on how to teach agglutinative languages effectively and develop dialectal intelligibility. There is an institutional responsibility to provide a coherent and cohesive language learning experience to Indigenous students, which calls for joining efforts between criollos and Indigenous teachers, centering their efforts on biliteracy. Finally, a DBR approach grounded in Indigenous research methodologies is a promising mode of operation to generate knowledge needed by the urgent demands of language revitalization which also makes use and contributes to research and practice on multilingual context in the global sphere.

Chapter 1 : Introduction

In Latin America, home to 42 million Indigenous peoples[1] speaking more than 500 languages (Sichra, 2009; World Bank, 2015), bilingual education is key to protect Indigenous children's right to learn in their mother tongue (Cortina, 2014; Hecht, 2009). In a global context of growing recognition of the pluricultural and multilingual nature of societies (Hornberger, 2017), educational systems founded with the one-language one-nation ideology are being examined in their capacity to create nurturing environments for multilingual students to thrive. Teaching in Indigenous languages requires, in turn, the preparation of Indigenous teachers who can develop effective oral and written bilingualism in the Indigenous and dominant languages in their students. Attention to Indigenous teacher education varies across national contexts, yet, in general, is underfunded, deprioritized, and underresearched (López-Hurtado & Sichra, 2016).

Acquisition of biliteracy (or written bilingualism) by Indigenous children and youth is a declared crucial goal for elementary schools ascribed to bilingual education modalities, usually located in Indigenous communities (Cortina, 2014; López-Hurtado & Sichra, 2016). Literacy in the dominant language is a necessary condition to access higher education and professional opportunities in society while literacy in the Indigenous languages contributes to language

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[1] Indigenous is a term to identify -and self-identify- individuals and communities who share some cultural practices, a political identity, and have a continuous presence in the territory they consider their homeland (Cadena & Starn, 2007; Indigenous and Tribal Peoples Convention, 1989; Declaration on the Rights of Indigenous Peoples, 2007; Postero & Zamosc, 2006; Wade, 2010). As with other identifiers, it is a contested concept, with a colonial imprint, the center of historical debates to define it, and imbricated with gendered, racial, and linguistic identities that are embedded in historical and geographical contexts (Bonfil Batalla, 1972; Stavenhagen, 2010; Wade, 2010). It is associated with the terms Native American, American Indians, federally recognized tribes, First Nations, Aboriginal, *pueblos originarios* [original peoples], *nacionalidades* [nationalities], *indios* [Indians], and *aborígenes* [aboriginals]. Simultaneously, there is movement to name each Indigenous people according to their own chosen descriptor and reject imposed and historical labels, many of them derogatory in nature. My decision to use Indigenous is to align with global Indigeneity perspectives (Smith, 2012) to promote sharing of knowledges and experiences among communities facing similar challenges across the globe.

revitalization, intergenerational cultural transmission, and the protection of linguistic diversity. Indigenous teachers' possibilities to develop biliteracy competencies in their students depends on several factors, among them their preservice training (Cuenca et al., 2007; Schmelkes & Ballesteros, 2020; Unamuno, 2018). Thus, in the context of Indigenous teacher education programs (ITEP) and centering the voices of Indigenous language educators and preservice teachers, I studied and collaboratively reflected on teacher educators' enactment of biliteracy practices in Spanish and Wichí and Qom[2] Indigenous languages, Indigenous preservice teachers' development of biliteracy competency, and the relationship between these practices and competencies, through an iterative process that incorporated the co-design of a language teaching tool at two teaching institutions in northern Argentina.

Statement of the Problem

The problem addressed by this study was the modest results achieved by teacher preparation programs serving Indigenous preservice teachers in developing biliteracy competency and what can be done about it when connecting researchers and practitioners. Several studies have projected, by the end of this century, between half and up to 95% of the linguistic diversity of the world—close to 6700 languages—will be lost or severely endangered (Moseley, 2010; Pérez Báez et al., 2019). A growing awareness of this global trend coupled with Latin American Indigenous communities' fight for their rights provided the background for the

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[2] In terms of self-identification, members of the two Indigenous communities invited to participate in this research choose the terms Qom and Wichí. In anthropological literature the first Indigenous people are also known as Tobas, yet they do not find this term derogatory (Gordillo, 2005). Their language is also named Qom, and sometimes Toba-Qom, Namqom or Qom Lactaq. On their part, the Wichís received different labels Mataco, Noctenes, and Matahuayo. In Argentina, we self-identify as Wichí [people or humans] (Palmer, 2005), while in Bolivia in recent decades the term Weenhayek [different] is used (Alvarsson, 1988). The language is named Wichí and also Wichí Lhamtés. Therefore, I will use the terms Qom, Wichí and, occasionally, Wichí-Weenhayek to refer to the Indigenous peoples and Qom Lactaq and Whichí Lhamtés to refer to the language spoken by those communities. I chose to write Wichí with an accent mark in the last syllable to guide correct pronunciation and following Wichí author Lecko Zamora (2009).

creation and development of bilingual education modalities and teacher preparation programs in this region of the world. However, several challenges are faced by these efforts, namely, the schooling process from the very first years of kindergarten up to university education level have historically served the purposes and ideals of the nation state, promoting a monolingual Spanish language ideology detrimental to Indigenous identity and languages. Indigenous communities have traditionally been oral communities with the introduction of literacy happening in the last century, as a technology for religious conversion and domination. Indigenous educators and preservice teachers are still combating the effects of assimilation policies while cultivating new ways of thinking and doing Indigenous education.

Addressing this problem from a dominant culture perspective has the risk of further contributing to Indigenous knowledge erasure in these recently created educational spaces. Ignoring the problem will also condemn teacher preparation programs to repeat approaches and strategies that have obtained weak results. Teacher education programs are uniquely fertile spaces that bring together Indigenous language teachers, speakers, and learners for a period of 3 to 5 years, with the possibility of centering Indigenous communities hopes and dreams in their praxis. There is not a lack of commitment or enthusiasm. What is needed is a deeper engagement with Indigenous perspectives, a more fluid conversation between practice and research, and a strategic use of available although limited resources.

Background and Context

The Argentinian nation state was founded on the dialectic of civilization versus barbarism (Briones & Guber, 2008; Hirsch & Gordillo, 2003), its national identity premised on the concept of melting pot (i.e., crisol de razas) (Briones, 2005). However, in practical terms, this metaphor translated in a homogenic and European self-image (Briones, 2005). The erasure of the Indigenous component of national identity was achieved by a systematically executed plan to

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eliminate, silence, or assimilate Indigenous population and a hegemonic narrative that

invisibilized Indigenous groups (Hirsch & Gordillo, 2003). Indigeneity was, still is, associated

with the "savage" Other, declared extinct and, therefore, erased from present concerns and the

possibility of a shared future. An example of many (cf. Artieda, 2017) is found on this 1910

Civic Education Official Textbook:

> Teacher: ¿What is the current population of the Republic of Argentine?
> Student: My homeland, sir, has achieved -in less than a century of independence- a population of over six million inhabitants.
> Teacher: ¿How many 'savage Indians' are there currently in our country?
> Student: ¡Not even one! The Republic of Argentine is the only American Nation that does not have savage Indians within its borders. (Ministry of Education, 2015, p. 28)

The school system became an effective instrument in this erasure (Hirsch & Serrudo,

2010). Its curriculum, cultural practices, and teacher preparation all naturalized the idea that

Indigenous populations were a thing of the past, extinct due to military campaigns in response to

the threat that their aggressive behavior posed for the nation. For most of its republican period,

schooling was a colonization tool (Hirsch & Serrudo, 2010; Rogoff, 2003).

The return of democracy in the mid-1980s, the consolidation of a global discourse on

multi- and interculturalism, and the configuration of ethnic social movements in the region,

explain the re-emergence of ethnic identities and indigenous struggles in Argentina (Hecht,

2015; Hirsch & Serrudo, 2010). A new legal framework provided support for Intercultural

Bilingual Education (IBE) policy. In contrast to more than a century of homogenizing, Spanish-

speaking and citizen-building public schooling, IBE is based on achieving bilingualism,

interculturality, decolonizing practices, and promoting Indigenous cultures and identities

(Cortina, 2014). In Argentina, IBE was originally designed as a welfare focalized policy in a

neoliberal wave of reform and, when first organized in 2004, the National IBE program was a

dependency of the National Coordination for Compensatory Programs (Hecht, 2015). As in

many other countries, interculturalism was limited to Indigenous peoples rather than seen as a

need for the whole educational system. This implied that IBE was relegated to a substandard level of education. Indigenous languages, knowledges and new perspectives on history were not deemed necessary to mainstream to the national educational system. Siloing IBE policy impacted the use of resources deprioritizing human and material investment, kept educational actors isolated, and slowed down dissemination of useful educational research, further limiting access to high-quality education.

As of 2022, Argentina's educational system consisted of 10,600,000 K-12 students, 8% rural, organized in 36,400 schools. Of these schools, 45% of the elementary level and 26% of the high schools are in the rural area (Ministry of Education, 2022). In relation to the national system, IBE modality had approximately 65,000 K-12 students, 70% rural, distributed in 1,056 schools, 86.9% of them in rural areas (Ministry of Education, 2015). An IBE school in Argentina is characterized by schools situated in and serving indigenous communities. When they started, the classrooms had two teachers. The first one was an Indigenous speaking community member responsible for teaching cultural knowledge and *idioma* [the Indigenous language], who may not have received training or possess a formal pedagogical degree. The second one was a *criollo*[3] who was responsible for teaching Spanish and all other subjects (Hecht, 2015; Unamuno, 2018). As documented by research (Unamuno, 2015; Zidarich, 2010), this partnership is complex, with a broad spectrum from collaboration to subalternization of the Indigenous teacher. Additionally, IBE coverage is concentrated on the first years of elementary education, does not have a consistent plan for Higher Education, presupposes a rural setting, and has not developed a clear approach for linguistic diversity (Hecht, 2015; Hirsch & Serrudo, 2010). Gradually, teacher

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[3] Criollo, originally a colonial term to identify European descendants born in the Americas (Wade, 2010), it is commonly used in Northern Argentina to indicate ethnically mixed Argentinian people, culturally non-Indigenous, also sometimes referred as blancos [White people].

preparation programs have been graduating Indigenous teachers who are becoming head-teachers in these IBE classrooms.

Among its 24 provinces, Chaco, situated in the northeastern region of Argentina, has been a pioneer in a normative framework more attuned with Indigenous communities demands. In the educational sector, there are close to a dozen teacher training colleges with degrees for Indigenous education. The first one was created in 1987, the year that the Aboriginal Law was approved in the province (Almiron et al., 2021; Unamuno, 2014). This context provided breadth and depth of experiences to analyze the construction of biliteracy practices.

I have been in relationship with actors in this context for over a decade, participating in conversations which guided the formulation of the research question. In 2011, I met Wichí-Weenhayek elementary teachers in northern Argentina and south of Bolivia who generously opened their classrooms and shared their experiences implementing an Intercultural Bilingual Education policy. This reconnection was facilitated by my Wichí relatives who are leaders, activists, and educators. The main conclusion of that first research project was a need to understand how educational policy needs to answer simultaneously to academic achievement and the transformative project of Indigenous communities in their search for a more just society.

In the summers of 2018 and 2019, I travelled to the provinces of Salta and Chaco and explored what might be central concerns of Indigenous educators and youth. Explicitly in their discourse or through the practice of sharing books, newspaper clips, and educational materials, several Indigenous actors interviewed expressed the importance of mastery of literacy practices and abilities. One person shared his rejection of churches and missionaries, "but I have to recognize they gave me the written word" (Personal communication, AC, 2019). Key actors in creating and re-creating literacy practices in both languages are Indigenous teachers (Ballena &

Unamuno, 2017), who constitute language communities employing written Indigenous languages to communicate, including the use of social media. Additionally, Indigenous teachers are eager to create and use educational material that supports Indigenous language learning and use (Hecht & Zidarich, 2016). However, achieving high biliteracy competency is still elusive. During the pandemic, a team of Indigenous researchers, of which I am part, conducted some interviews about a scholarship program for Indigenous youth in a public university in Chaco province. Findings from the interviews showed the challenges that Indigenous students face to advance in their literacy competency in Spanish (Personal communication, Indigenous tutors, 2021). Finally, cultural promoters and Indigenous teachers strongly value literacy competency in the Indigenous language and Spanish which usually is highlighted by the production of literary and informative texts for a wider audience. As an interlocutor in those conversations, I was also drawn to the topic by personal experience and interest, particularly in the strategic nature of the field of teacher education, as a space where knowledges and practices are constructed and reproduced in hundreds of classrooms, and my previous work with teaching literacy across the educational levels. In conjunction, these experiences and conversations informed the research question and the possibility of working collaboratively in answering them.

Purpose and Research Questions

To explore what and how biliteracy practices are taught and learned, I conducted a year-long design-based research (DBR) study embedded in a research-to-practice partnership (RPP) in collaboration with local Indigenous educators and researchers, based on elements of Indigenous research methodology. Theoretically, I drew from the fields of biliteracy studies and teacher preparation in the context of Indigenous language promotion, which were coherent with a sociocultural approach to learning complemented with insights from Indigenous education.

Specifically, employing the continua of biliteracy framework (Hornberger, 1989, 2017, 2022) to map biliteracy practices in Spanish and the Indigenous language, I asked: **How do teacher educators contribute to Indigenous preservice teacher' development of biliteracy competencies in two Indigenous teacher education programs (ITEP) in northern Argentina when participating in a design-based research (DBR) study?** Iterative data analysis helped prioritize which aspects of the literacy teaching were included in the RPP. The specific research questions were:

RQ1: How do teacher educators of Spanish and Indigenous language enact teaching strategies that create biliteracy practices?

RQ2: What is Indigenous preservice teachers' initial level of biliteracy competency and how does it change in the course of one academic year?

RQ3: How do teacher educators and Indigenous preservice teachers perceive the relationship between their enactment of biliteracy teaching strategies and the development of biliteracy competencies in Indigenous preservice teachers?

RQ4: How are teacher educators' pedagogical decisions influenced by their participation on the co-design of biliteracy teaching and learning?

Significance of the Study

Through this dissertation, I intended to understand how Indigenous teacher education programs were creating biliteracy practices with the potential to align themselves to the fights of Indigenous communities for a more just society. I expected to contribute to the empirical evidence about how biliteracy practices are created, employed, and understood by Indigenous language teachers and preservice students. Based on the continua of biliteracy framework, I further theorized the meanings and uses of biliteracy in Indigenous contexts which demanded attention to the social dimension of these practices and to the cognitive and intellectual exercise of literacy.

Approaching this reality from a design-based research angle was a contribution to a description of a naturalistic educational space, which also accounted for the dynamics of change, highlighting the opportunities, shifts, and tensions observed during an iterative process of action and reflection. Finally, the collaborative nature of this study imbued its process and results with the perspectives and voices of Indigenous researchers, teachers, and students, providing a vantage point to understand the strategic decisions Indigenous actors made as they faced the legacy of exclusionary social processes and interacted with new ideologies which value diversity and Indigenous knowledges.

Methodological Decisions

Conducting research in Indigenous contexts required reflection and engagement with the colonial imprint of research *about* Indigenous peoples (Simpson, 2014) and to understand why for Indigenous people *research* is such a dirty word (Smith, 2012). Māori anthropologist Smith's (2012) seminal work critically analyzed traditional research as part of a colonial project to extract knowledge from Indigenous communities. In response, she systematized an Indigenous perspective on research. To orient Indigenous scholars who want to engage in research in their own or other Indigenous communities, she articulated probable questions formulated by Indigenous communities to their own members in their role as researchers:

> Whose research is it? Who owns it? Whose interests does it serve? Who will benefit from it? Who has designed its questions and framed its scope? Who will carry it out? Who will write it up? How will its results be disseminated?... These questions are simply part of a larger set of judgements on criteria that a researcher cannot prepare for, such as: Is her spirit clear? Does he have a good heart? What other baggage are they carrying? Are they useful to us? Can they fix up our generator? Can they actually do anything? (Smith, 2012, p. 10)

These questions challenge other aspects of the research effort that might not be part of the final written document but affect how to connect with Indigenous individuals and communities, how to make decisions about the research question, how to plan for the practical uses of research outcomes, and how to cultivate certain attitudes and values to establish a constructive and fair

relationship with those who choose to participate in the research effort. One of Simpson's (2014) most important questions, to which I personally resonated, was how to come back home after the research is completed?

As a Wichí scholar myself, the decisions about *how* to research with my own people—and connected Indigenous communities—was inseparable from *what* to research. On a basic level, I could not replicate extractive colonial research practices. However, how to conduct research that benefited Indigenous communities, was practical, useful, and conducted with a good heart and clear spirit is still a work-in-progress. What I considered equally important was that academic communities (e.g., universities training doctoral students), were spaces of knowledge generation which should be available for Indigenous peoples and in dialogue with Indigenous knowledges. The concept of *diálogo de saberes* [a dialogue of knowledges] captured the possibilities of new types of relationships which could provide new ways of seeing reality and acting on it. In the methods chapter, I expanded my methodological commitments and how Indigenous research methodologies informed the design of this study.

Additionally, I have worked on teacher in-service and preservice education, with an emphasis on literacy, for two decades, in Chile, Bolivia, Ecuador, and the United States. As an educational researcher I expect to conduct research which informs and transforms teacher practice. While transforming practice requires a combination of theoretical and conceptual developments, research grounded in laboratory settings, quantitative studies and more, my intellectual commitment is towards what can be broadly defined as action research, that is, the systematic inquiry about educational initiatives and projects conducted in natural settings. For this goal, I oriented myself and learned from research-to-practice partnerships (Coburn et al., 2021; Coburn & Penuel, 2016; Farrell et al., 2021) and studies using an iterative process of

action, reflection, conceptual development, and action, such as design-based research (Barab & Squire, 2004; Brown, 1992; Engeström, 2001).

These orientations guided the methodological decisions, presented in chapter 3, to conduct a design-based research study embedded in a research-to-practice partnership employing Indigenous research methodologies to understand biliteracy practices in Indigenous teacher training colleges in northern Argentina.

Collaborative research is becoming the norm in educational research as measured, for example, by the growth of co-authorship in published papers and the requirements of funding agencies (Spencer Foundation, 2023; William T. Grant Foundation, 2023). However, this concept is also hard to define and overused, ending up referring to a wide spectrum of initiatives and levels of collaboration. Moreover, due to its conceptual laxity it could be used as an umbrella for relationships which re-instantiate hierarchical and extractive research practices. In this context, I consider the development of parameters or criteria of collaboration useful to qualify the type and level of collaboration with which different projects are engaged. To describe how collaboration occurred in this project I considered one model, delineated by a team of learning scientists who have also worked in RPP and DBR projects (Penuel et al., 2020), who identified principles for collaborative education research with stakeholders, that I summarize as follows: the work supports the agency of participants by collaborating with them as partners in research; accounts of the work are explicit on members' roles and contributions; the research problem is central to stakeholders and attends to context; research accounts for the variation between implementation and intervention, and is well-planned, rigorous and responsive; and research provides something valuable to participants and is valuable outside of the partnership.

Within the constraints of my dissertation project, where the timeframe, methods, authorship of the final research report and graduating individual were fixed, I designed and implemented a collaboration in three specific spheres of action. The first one was the teacher training colleges, which I have been visiting and contacting since 2018 and whose authorities opened their doors to conduct research, received interim reports, and made known additional research needs to continue with a research agenda. The second sphere is with the Indigenous language teachers with whom I developed a shared stance on their students, classrooms, and needs, co-designed a language education tool, and discussed preliminary analysis. Finally, the third sphere was with the research team, a group of four Wichí and Qom-Moqoit local scholars who validated the research protocols, conducted interviews and observations, analyzed, and reflected on findings, participated in monthly meetings to reflect on the research process, and with whom we authored a conference paper on Indigenous teacher relational agency. In this way, the level to which this study expressed a research collaboration is open for readers to assess.

Indigenous Futurities

A final and fundamental dimension of this proposal is its orientation towards time and social transformation through the concept of Indigenous futurities. Indigenous scholars have been writing about Indigenous futurities as an ethical commitment when doing research, creating, and working in Indigenous contexts. As explained by Kanaka Maoli scholar Goodyear-Kaʻōpua "Futurities are ways that groups imagine and produce knowledge about futures" (2018, p. 89). In contrast with narratives that both situate Indigenous traditions in the past and describe its present exclusively as a weakening of tradition, futurities imply an Indigenous individual or collective actor recreating its present and projecting its being into the future. Centered on language as a source of change, poetry, storytelling, science fiction, cinema, drama, and literature these narratives create a future where Indigenous communities exist, vitally, alongside

non-Indigenous communities. In this context, the orientation towards social justice and the content of an ethical framework is defined by actions that contribute to the goal of a more prosperous material and spiritual future for Indigenous communities and by extension recognizing our interdependence all communities, and which employ means coherent with these goals.

While this might look like a simple discursive intervention, by its contrasting nature with condemnations to disappearance or complete assimilation, Indigenous futurities open the possibility of constructing a different path forward, therefore re-signifying present-day actions. This capacity to imagine a different future, and prefigure it through today's actions (Creasap, 2020; Leach, 2013), should not be viewed as a negation of the harsh current material realities, such as land dispossession, poverty, exclusion, and other injustices. The projection of the being into the future reaffirms Indigenous communities' will to exercise individual and collective agency in pursuit of constructing a better reality for the next generations. Prefiguration, conceptualized as an alignment between the present and the future, between means and ends of transformative social projects, and as ways of thinking, organizing and acting that reflect espoused ideals, has also been brought to the educational field by learning scientist and Indigenous scholars (Bang & Vossoughi, 2016; Vossoughi & Booker, 2017; Yates, 2015) providing a strong theoretical and methodological background for this project's methodological design.

Definition of key terms

There are several important terms and choice of words that I would like to present for clarification purposes.

- **Biliteracy** is defined as instances of communication, oral or written, in two languages— in this case Spanish and Qom or Wichí—in and around writing (Hornberger, 1989, 2022).

- **Biliteracy competency** refers to the complex and dynamic process of reading and writing in two languages, including cross-linguistic and metalinguistic abilities to use knowledge from one language to strengthen the other, and pragmatic abilities such as deciding to whom, and when to speak each language or a combination of both, or more languages.

- **Biliteracy practices** are the ways in which people within specific contexts communicate orally or in writing, in two languages, about a piece of writing and the social, cultural, and political context in which they occur (Hornberger, 2022; Purcell-Gates et al., 2011).

- **Classrooms** refers to the teacher training colleges' classroom where preservice teachers receive the preparation needed to become teachers.

- **Competency or competence** is understood as a complex ability from a specific domain to *do* as well as to *know*, and face or resolve a task in real-life situations (Klieme et al., 2008). Competencies are possible to be observed across individuals, with a level of performance (i.e., adequate, sufficient, suitable) and improvable (Shavelson, 2010).

- **Language teachers** refer to instructors or faculty in charge of courses for pre-service teachers in teacher training colleges. They are also referred to as (Qom/Wichí/Spanish) language teachers, teacher educators, teachers, or professors.

- **Literacy competence** is defined as the capacity "to understand, use, and reflect on written texts, to achieve personal goals, develop capacity and knowledge, and participate in society" (OECD, 2006, p. 7). Literacy competence includes the skills of reading (coding/decoding, fluency), its instrumental use to learn, and its critical use to transform thinking and the world (Solé, 2012).

- **Preservice teachers** refer to adults who are studying to become teachers. They are also referred to as Indigenous teacher students, future teachers, or teacher candidates.

- **Teacher training colleges** refer to tertiary educational institutions that offer 3- or 4-year programs to become a teacher. In Argentina, these institutions include (in Spanish): *Escuelas Normales Superiores*, *Institutos de Enseñanza Superior*, *Institutos Superiores de Profesorado*, and *Institutos Superiores de Formación Docente*. They are also referred to as colleges, teacher training programs, or teacher training institutions.

Organization of the Dissertation

In this chapter, I introduced the current study and provided background on the history of Argentina in relation to Indigenous communities and language policy.

Chapter 2 presents an overview of relevant research from the fields of biliteracy studies and teacher preparation in connection to Indigenous teachers engaged with Indigenous language promotion efforts. Chapter 3 provides an in-depth discussion of methodological decisions and methods choices to carry out a design-based research study informed by Indigenous research methodology.

Chapters 4-7 present the major findings of the current study. In Chapter 4, I describe six biliteracy practices identified, and Qom language teachers' life and educational trajectories. I characterized the biliteracy practices and teachers' rationale and explain how Qom language teachers, while creatively facing adverse conditions, have found how to transform their experiences to create a learning environment nurturing Qom identity and pride in cultural heritage.

In Chapter 5, I present Indigenous preservice voices and biliteracy competency. In a shifting sociolinguistic landscape, Qom preservice teachers have a low starting point in terms of reading comprehension abilities, yet also have clear ideas about some of the practices that have benefited them in developing literacy skills. Qom preservice teachers perceive both languages as

separated, privileging Spanish as the medium of instruction and content in all subject areas and focusing on Spanish as the path to access literacy.

In Chapter 6, I describe how Qom language teacher teaching is modeled after approaches to teach literacy to adult Qom speakers or to teach early literacy in Spanish to children, both approaches different to their current students' situation. I present how previous experiences are constraining or enabling Indigenous language teachers' teaching approaches. In Chapter 7, I narrate the co-design of a language teaching artifact, analyzing the challenges in their implementation and the outcome, critical instances that defined the relationship between research team and participants, and how Indigenous research methods enhance our understanding of how to move in the direction of horizontal and collaborative knowledge generation.

In Chapter 8, I discuss my findings through the lenses of the continua of biliteracy framework focusing on the meaning and implications for research and practice.

Chapter 2 : Biliteracy in Indigenous teacher education: a review of the literature

Biliteracy, broadly defined, is understanding and making sense of the world using two languages. Central to biliteracy is the concept of literacy. In this review I present the case to simultaneously conceptualize literacy in multiple and expansive ways, yet to ensure the quality and excellence in teaching and learning text literacy in the context of Indigenous languages. While the concept of literacy is not narrowly defined as reading and writing, it cannot ignore that it does require to learn to read and write. By reading and writing I am referring to personal construction of meaning interacting with texts and developing a voice to write authentic texts which are valuable to achieve individual and community's goals.

In the last two decades, research on biliteracy has risen driven by the growing attention paid to the global prevalence of multilingual contexts, and the demand to the educational systems to respond to those contexts. Globalization trends, such as the massive movement of populations across continents, an emerging consciousness of the value of linguistic diversity, and a definition of language and identity as human rights, among them Indigenous peoples' rights to learn and maintain their languages, has also nurtured scholarly interest in researching these topics.

This review is organized in two parts. The first one presents four theoretical orientations prevalent in the field of literacy studies, the central concepts animating each, and conversations and debates among them. This concludes with the conceptual synthesis employed in this study of biliteracy as a complex and dynamic capability, a social practice embedded in historical relationships and recreated daily in social interaction, which also has a transcontextual nature and a cognitive dimension which must not be overlooked. The second part presents selected studies of the literature search and identifies some gaps to which this dissertation aims to contribute.

New Literacy Studies

      The first theoretical orientation is New Literacy Studies (NLS). This perspective emerged as a critique of what had been called the "literacy thesis" which postulated that oral and literate societies were profoundly different, particularly because writing changed the way people thought and saw the world, making logical thought and science possible (Ong, 1982). This "great divide" between cultures led to a limiting perspective of traditionally oral societies such as Indigenous communities. Street (2003) theorized that this line of thought, shared by schooling and development programs, was based on an autonomous model of literacy which considered that teaching literacy, just by itself, would have cognitive gains and better peoples life. This autonomous model considered literacy as neutral and universal, while in reality defined literacy according to Western culture.

      From a social practice perspective and with the use of ethnographic methods, research about reading and writing conducted by NLS described how literacy is highly context-dependent, embedded in historical relationships, connected to local ways of life, supported by orality, and ideological, that is promoting specific conceptions of knowledge, identity, and being (Barton & Hamilton, 2012; Gee, 2015; Heath, 1983; Street, 2003, 2011). The number of rich studies about literacy practices, their forms and meanings in different and varied contexts, consolidated the idea of literacy as a social practice as a prevalent paradigm in literacy research. Zavala (2001, 2002) in her brilliant NLS research of a Quechua rural community in Perú identified how literacy school practices in an oral Indigenous community imposed decontextualized writing without a real life purpose, emphasized errors and not achievements, declared the superiority of literacy over oral discourse, and demanded a way of writing with explicit information unnecessary in oral communication, and therefore unfamiliar to Indigenous children. She identified how oral practices such as storytelling and riddles could be relevant to promote learning.

However, from the lenses of education studies, this line of research while provided detailed and rich descriptions of how literacy took form at the local level, had difficulties explaining or promoting change, from within, as Street (2011) recognized it.

Researchers working on NLS received and engaged in debates about two important critiques. First, the emphasis on local context and its power to define the meanings and forms of literacy undertheorized the potentials of the technology of literacy and its transcontextualized nature, "a capacity to travel, a capacity to stay intact, and a capacity to be visible and animate outside of immediate literacy events. These capacities stem from the legibility and durability of literacy…" (Brandt & Clinton, 2002, p. 344). Second, the rejection of the autonomous model and the cognitive consequences of literacy should not be used to discard the importance of the cognitive dimension of literacy. Street (2011) was suspicious of global development agencies and their ideologues promoting a capabilities approach to literacy and a universalist discourse, which included the capacity to read and write as universal human right. Global efforts, embedded in ideologies of modernization and the promotion of capitalism, which at the same time channel resources to work on societal needs, such as acquiring higher levels of literacy, rely too on universalist discourses about the benefits of literacy, a global definition of literacy competence and the possibility of assessing its progress across societies (OECD, 2006). These debates show the tensions between the global and local nature of literacy, the context-dependent and universality of literacy, and between the social and cognitive dimensions of literacy.

Eventually, NLS researchers expanded their definition of literacy to include multiple modalities to access text, other non-textual forms of communication, and the coexistence of more than one language, coining the term "multiliteracies" (The New London Group, 1996). This expansive conceptualization of literacy was expected to welcome diversity and provide more

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tools to combat inequality, and as a multiliteracy pedagogy to change school's role in replicating linguistic discrimination. However, I argue that in educational settings, while important to value and appreciate different languages, texts, media, the need to focus teaching on certain areas demands precision. Particularly, the time constrains force teachers to prioritize how to treat literacy and visualize achievable goals. This expansive definition could also obscure the strategic need for underprivileged communities to achieve mastery and excellence in print or text-based literacy as a powerful tool to effectively participate in society, at the local, national, or global level.

However, researchers within the field NLS contested the text-based prevalence in literacy research and sustained that Indigenous communities have other valuable forms of literacy which should be recognized and valued (Menezes de Souza, 2007, 2008). This line of thought connected literacy to coloniality (Quijano, 2000, 2007), a configuration of knowledge and power, founded on European modernity as the norm to see and exercise dominance on the world. Analyzing the experience of language and literacy policies in Brazil, Menezes de Souza rejected neutral definitions of literacy, for it hided a Western-originated practice and its use for domination, but the author also rejected current progressive educational policy that by presenting literacy as intercultural were again reinstating the same Western-based concept of literacy. Menezes de Souza (2007), analyzed how the reluctance of Brazilian Indigenous communities to write in their own languages, but not in Portuguese, was due to Indigenous cultural characteristics which valued other forms of non-fixed communication, and other types of literacy (non-text-based). The author inferred the need to privilege Indigenous cultural practices and non-text-based literacies.

In a critical take about literacy policies for Indigenous peoples in Australia, Torres Strait Islands scholar Nakata (2003) sustained that knowledge about the Indigenous world has come mainly from anthropology and this has translated to a model of cultural differences, which explain the difficulties of Indigenous children to learn, including writing, based on the wide spaces between cultures. The author argued that although knowledge of difference, cultural sensitivity and intercultural communication is important, it should not be used as excuses for poor academic outcomes. Nakate stated "we fail our students if we do not ensure that they develop the necessary skills for success in non-Indigenous contexts" (2003, p. 10), including mastery of literacy. What he elaborated was an Indigenous standpoint to use literacy in the dominant language as way to "strengthen identity through understanding our position in relation to the outside world" (Nakata, 2003, p. 14) and to study Indigenous languages to develop more robust methodologies to teach literacy in the Indigenous language, accessing the wealth of knowledge successful teachers already display and what literacy learning research is finding relevant in different contexts across the world. I agree with this take, as Indigenous communities, and their historical experience of survival and survivance, have a collective learning about the importance of literacy tools, the privilege which accessing them means, and the critical stance to take ownership and use it for Indigenous communities' benefit.

Continua of Biliteracy Framework

A second productive line of research on biliteracy, which partly generated from experiences with Indigenous communities, is the continua of biliteracy (CoBi) framework develop by educational linguist Hornberger. Based on her research in both a Philadelphia school district and Quechua speaking communities in the Andean region, Hornberger (1989, 2017) developed a framework where bilingualism and literacy meet. Sprouting from Heath's (1983) ethnography which identified literacy events, Hornberger conceptualized biliteracy as "any and

all instances in which communication occurs in two (or more) languages in or around writing" (Hornberger, 1990, p. 213).

Initially, CoBi had the goal of mapping fluid, rapid-changing contexts where bilingual children and youth were learning literacy. Hornberger rejected static and dichotomic notions of oral versus literate culture, proposing instead to see orality and literacy as a continuum, a dynamic and contested space, with bidirectional movement. The emphasis is on interaction and interpretation around writing. Her framework evolved to situate research, teaching, and language policy in multilingual settings across four dimensions (Hornberger, 2022).

As shown in Figure 1, the four dimensions are:

(a) Contexts: where does biliteracy occur? And how to create learning environments that promote biliteracy. Takes into consideration the micro/individual and macro/societal, bi(multi)lingual and monolingual, and oral and literate contexts.

(b) Development: how does biliteracy develop? And how to recognize and build on students' language and literacy repertoires. Includes the continua of receptive and productive, oral and written, and L1 and L2 skills.

(c) Content: what is conveyed through biliteracy? And what are the meanings and identities expressed by biliteracy materials. Takes into account the incorporation of minority and majority voices and literatures, vernacular and literary texts, and contextualized and decontextualized knowledges.

(d) Media: When and by what means does biliteracy occur? And how to leverage students' knowledge for learning. Requires identifying if the exposure to the two or more languages is simultaneous or successive, if their linguistic structures are dissimilar or similar, and if their orthographic scripts are divergent or convergent.

This framework oriented researchers and teacher towards considering all dimensions of biliteracy as resources to draw from in order to improve students' chances for their full language and literacy development and proposes—in opposition to a linear curricular organization of activities—"backtracking, spurting, or criss-crossing along and across the continua" (Hornberger & Link, 2012, p. 244). It was based on evidence that the strength in the first language contributed to academic and linguistic performance in the second language, however, transfer of skills was also "elusively unpredictable" (Hornberger & Link, 2012, p. 244) due to the many dimensions at play.
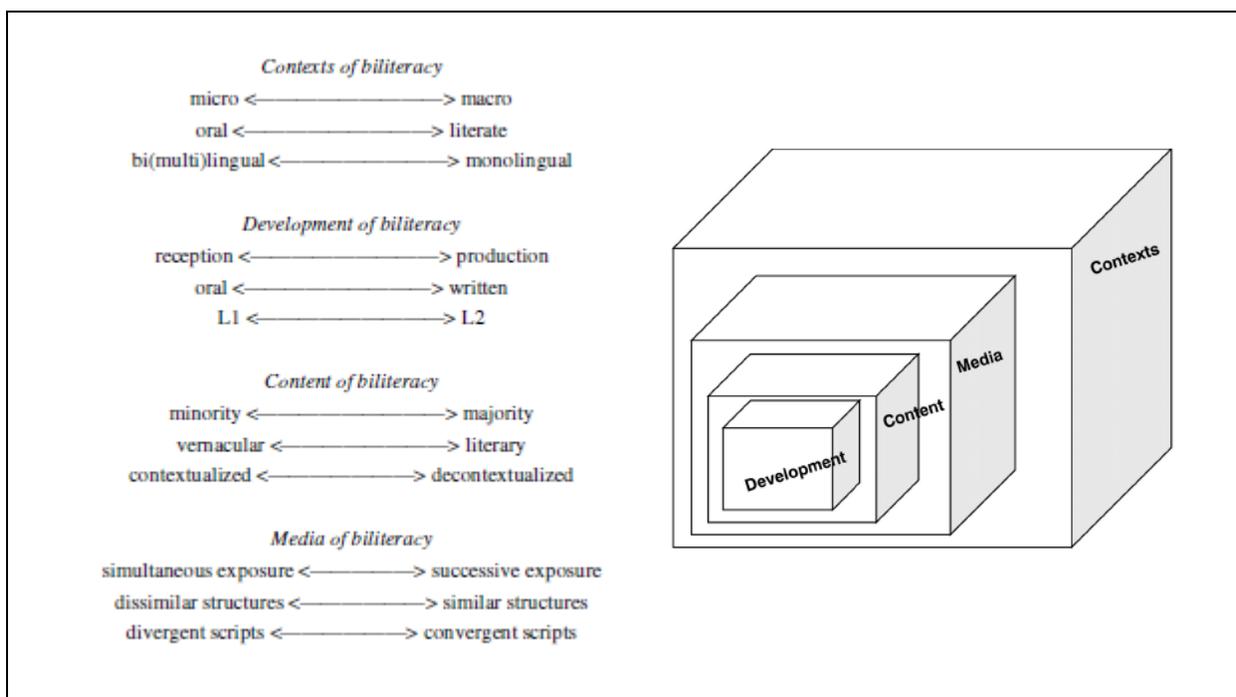
Figure 1. Continua of biliteracy
(adapted from Hornberger & Skilton-Sylvester, 2000)

CoBi is a powerful heuristic to map biliteracy practices, but how to turn such a description of reality into a strategy for transformation is open to the interpretation of researchers and practitioners. It has also been criticized as too complex to use all 12 continua at once for analysis, and not having a distinctive contribution when compared to the concept of literacy as a

social practice. In a review of 25 years of research, Hornberger (2022) reflected on the uses of this framework which allowed for consideration of policy, research, and educational practices, and being taken up by researchers in Europe and Africa, after its initial use in North and South America. A recent study on Quechua communities using this framework was useful to understand how teachers promoted Indigenous children's voice in the classroom (Hornberger & Kvietok, 2019). Overall, CoBi provided a rich and flexible framing of literacy in multilingual contexts, that has allowed for researchers, practitioner, and policymakers to dialogue and work together. However, it still required to negotiate desired pedagogical approaches and the social goals of biliteracy implicit in these dialogues.

Translanguaging and Literacy

The third theoretical orientation prevalent to research context with more than one language is translanguaging. The term translanguaging was originally posed to describe pedagogical practices where students heard or read a lesson in one language and develop their work in another (García & Leiva, 2014; Wei, 2018). It was coined in Welsh as *trawsieithu* by William and translated to English by Baker (Wei, 2018), and implied that instead of having a negative view of the mixing of two languages in the classroom, those practices helped maximize students' and teachers' linguistic resources for learning. Translanguaging is connected to similar concepts such as hybrid language practices (Gutiérrez et al., 1999), code-switching (Woolard, 2004 as cited in Martínez, 2013), codemeshing (Canagarajah, 2011) and flexible bilingualism (Creese & Blackledge, 2011). More specifically related to literacy practices, translanguaging is connected to Hornberger's (2004) continua of biliteracy, García's (2007) pluriliteracy, and Gutiérrez's (2008) textual third spaces.

Translanguaging has been expanded and further theorized to propose that (a) translanguaging is a naturally occurring phenomenon for multilingual students, and has to be

taught in the classroom, (b) the ability to switch between languages to convey meaning and communicate should be conceptualized as a repertoire of diverse language practices that are part of an integrated system, (c) intermingling includes mixing of language varieties—such as vernacular/formal/academic and dialectal variations—, and (d) it should not artificially exclude paralinguistic and extralinguistic dimensions of human communication (Canagarajah, 2011; García et al., 2007; Wei, 2018). Moreover, scholars argued that translanguaging allows for immigrants in the US to "resist the historical and cultural positionings of English monolingualism or 'heritage language' bilingualism" (García & Leiva, 2014, p. 199) by using all their linguistic resources in the classroom.

One of the strengths of this framework is its generation and orientation to the classrooms and educators. By its emphasis on promoting the full semiotic and linguistic repertoire available to the learner, translanguaging approaches helped teachers avoid deficit-perspectives and develop a strength-based approach to teaching literacy. One of the premises was that translanguaging could be permanently promoted as a reflection of how multilingual societies interact.

The purpose of this succinctly presentation of a vast research agenda is to consider some tensions between this proposal and considerations regarding the promotion of Indigenous or heritage languages. Beyond accepting and valuing translanguaging practices naturally occurring in the mentioned contexts, there are three main concerns raised for the specific context of Indigenous language teaching. The first one is that some successful initiatives to promote Indigenous languages, such as cultural and linguistic immersion summer camps (Madden, 2015) and other Indigenous teaching strategies (Green & Maracle, 2018; Hinton et al., 2018), showed the deliberate cultivation of monolingual spaces were beneficial. Particularly for heritage

languages or fragile sociolinguistic situations, the effort to keep languages separate protects language practices of the minoritized communities. If chosen as a strategy for intergenerational transmission, in this case language separation would not be exacerbating minoritization but rather creating an intimate and safe space for Indigenous language learning.

Second, a critique from researchers working in Indigenous context posed that translanguaging's rejection of the idea of different languages, deprives Indigenous teachers of the symbolic capital and political positioning that being bilingual—speaking two distinctive languages—represents (Bonnin & Unamuno, 2021). Finally, and all-encompassing definition of language and literacy has the risks of not paying sufficient attention to the skills and abilities necessary for literacy competency. This echoes my critique of how expansive definitions of literacy guide or not teachers work in the classroom. The question about how to adequately attend to the need for the development of skills, vocabulary, and the normative aspects of writing that help convey meaning, particularly in scientific disciplines demand clarity and precision while simultaneously attending to meaning, social practices, and the incorporation of new societal dynamics, including how new technologies and online spaces are redefining literacy.

In summary, I argue that transformative language and literacy teaching approaches should not be measured exclusively by the presence or absence of language intermingling, but rather by the development of linguistic competency in each language and metalinguistic and pragmatic competencies to strategically choose when and how to be monolingual, and when and how switch back and forth between languages, orally and in writing.

Sociocultural perspectives on literacy

The fourth theoretical framework is sociocultural theory. Grounded in sociocultural theory (Vygotsky, 1962, 1978) and constructivist approaches that emphasize readers bringing their own ideas to the text, reading and writing was viewed as constructing and reconstructing

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meaning. Critical sociocultural theory (Gutiérrez, 2008; Gutiérrez et al., 1999) introduced the concepts of third spaces and hybridity for learning literacy. In her ethnographic work, Gutiérrez and colleagues (1999) described how the "official space" created by school culture collided with the "unofficial space" of children's home language and practices. However, they observed how some teachers were able to welcome and leverage children's interventions, creating a third space that drew parallels, combined, expanded, and reflected on the differences and similarities between vocabulary, meaning, tone, and other aspects of children's home language and literacy practices and school context. Gutiérrez expanded her work to a proposal of sociocritical literacy, influenced by Freiren pedagogy (Freire, 2005), which included (a) a historicized view of the educational and sociopolitical reality of minoritized communities—how to 'read the world'—, and (b) a conscious attempt to find hope and possibilities that "can serve as new tools for helping students read and write their way into the university as consciously historized individuals" (Gutiérrez, 2008, p. 15).

In conclusion, established theories on the field of literacy studies—generated in opposition to an autonomous perspective on literacy—define literacy as situated in social practice and ideologically laden (vehicle for certain culture and establishing certain power relationships). I argue for the need to complement this perspective with an acknowledgement of the transcontextual and cognitive nature of literacy, particularly the importance of its development for Indigenous teachers. A lack of acknowledgment of the features that make literacy a powerful social technology and cognitive apparatus would be a disservice to the new generation of Indigenous teachers. Recognizing literacy as a social practice as well as a cognitive activity does not imply that the uses and functions of literacy in Indigenous communities should be imposed or follow Western models. However, sufficient tools and preparation should be given

to Indigenous teachers to explore and experiment with the schools and Indigenous families' possible futures for their languages, in the oral and written dimensions.

The continua of biliteracy framework, allowed me to synthesize a conceptualization of literacy as a social practice, and also adequately attends to literacy's cognitive dimension and the transformational possibilities of text or print literacy practices chosen and used by different cultures and communities as instruments to forge their futures. Therefore, I employed this framework with some analytical tools from NLS, with a conceptualization of literacy which although open for its multiple manifestations is centered on literacy related to print. This conceptualization allowed me to delve deep into literacy, strictly defined by the use of print, without negating the importance and presence of other forms of literacy which could also be analyzed from the data collected in the future. With this in mind, the following sections summarize recent research on biliteracy in Indigenous teacher education.

Biliteracy Studies in Indigenous Teacher Education

While instances of Indigenous teacher preparation programs have flourished in the last decades in Latin America, systematic inquiry of those experiences is scarce. López-Hurtado & Sichra (2016) attribute this situation to a lack of funds available for research and the need for more trained Indigenous educators and researchers to lead and conduct studies. A focused search of peer-reviewed academic journals in the 2000-2023 period, with the terms "biliteracy" AND "teacher education" AND "Indigenous'" and related terms, resulted in 18 articles.

An analysis of research findings showed that biliteracy practices in Indigenous teacher education and their study were promoted in Latin America by the implementation in the 1990's of Intercultural Bilingual Education (IBE) policies, a historic shift from Spanish-only schooling (Delany-Barmann, 2009). However, the background of policy implementation was the complex

sociolinguistic reality of Indigenous languages, including an important process of Indigenous retraction or weak intergenerational transmission (Milian & Walker, 2019).

Bilingualism in Indigenous contexts carries the additional responsibility of preserving and revitalizing languages facing linguistic retraction. As opposed to the situation of immigrant languages in the US such as Spanish, Chinese, or Hindi that have an independent community of speakers and producers of cultural resources, both oral and written in their country of origin; IBE teachers have a strategic role for the preservation of the language and to contribute to the development of its written form. In the reviewed studies, bilingualism was viewed as successfully speaking Spanish or Indigenous language, separately, depending on the context (Milian & Walker, 2019), however Spanish continued to be privileged for academic activities (Delany-Barmann, 2009; García & Velasco, 2012). This is consistent with teacher education classroom observations where Indigenous languages are mainly and exclusively spoken in language courses. However, research showed there was also some intermingling of Indigenous language in Spanish-dominant spaces, for verbal clarification, and to make the class more welcoming (Delany-Barmann, 2009). This tendency towards separate bilingualism (Creese & Blackledge, 2011) was subsequently carried into elementary schools. In those elementary schools were Indigenous teachers start working, the declared policy was of language maintenance, however Indigenous languages were taught mainly in the first years, to promote learning gains in children and then abandoned in the secondary level for Spanish (López-Hurtado & Sichra, 2016).

Biliteracy was conceptualized as the capability to read, but mainly to write, in Spanish and the Indigenous language, and "it is generally assumed that bilingual teachers are also biliterate" (Delany-Barmann, 2009, p. 291), yet all reviewed research converged in showing

teachers' challenges with the written language (Bastiani-Gómez & López-García, 2015).

Teachers were extremely proud of the instances when Indigenous language was used to write in the classroom, such as copying of names of objects, collective story writing, use of school text in Indigenous language, and the production of their own educational material (Delany-Barmann, 2009; García & Velasco, 2012; Milian & Walker, 2019).

Indigenous preservice teachers experience with biliteracy

The reviewed research highlighted some common characteristics of Indigenous teachers. Due to suffering discrimination and their Spanish-only schooling experience, Indigenous preservice teachers shared a belief in their own limited knowledge of Spanish and the Indigenous language, a sort of "linguistic insecurity" (García & Velasco, 2012, p. 11). Many Indigenous teachers believed that their command of Spanish was weak and also saw their command of the Indigenous language as limited due to lack of comfort in writing. Additional research conducted in Mayan contexts, described how language teaching practices displaced ownership of the language from its actual speakers to an imagined "pure" Maya speaker situated in the past and the minority who knows the new written conventions (Guerrettaz, 2015).

As observed by the researchers, teachers previous school experiences in Spanish-only traditional and discriminatory classrooms, reinforced literary practices such as copying, decoding without comprehension, and decontextualized language (García & Velasco, 2012) that were also common in non-Indigenous schools (cf. Whitman, 2008). Even against this background, Indigenous teachers showed creativity, pride in their work, loving care (Alfaro & Quezada, 2010), and hope as observed in their commitment to enact bilingual education (Delany-Barmann, 2009; García & Velasco, 2012), act as promoters of Indigenous languages in their relationships with parents (Milian & Walker, 2019), and in the enthusiasm to develop original written educational materials (Milian & Walker, 2019).

The field of Indigenous language revitalization, a growing body of research since 1990, also offered important lessons learned about working with Indigenous languages. The first one is the understanding that schools alone do not achieve growth of the number of speakers, yet they play a fundamental role in promoting Indigenous language learning (Hinton, 2003; Hornberger, 2008; López-Hurtado & García, 2016). Second, successful Indigenous language revitalization depended on adult learning too, be it parents who are willing to make the Indigenous language the home language, other members of the community to sustain language use in everyday life, and, significantly, teachers who will then teach the language. Among the approaches documented to teach several rely on immersion camps or seminar in the Indigenous language, and other approaches highlighted a deliberate effort to use Indigenous languages avoiding the mix with the dominant language: master-apprentice approach (Hinton et al., 2018), and the root-word method (Green & Maracle, 2018).

Gaps in the literature

It is clear that Indigenous teacher education is challenged by the demand to prepare Indigenous teachers to reach a strong competency in reading and writing in the dominant language and the Indigenous language, and to develop similarly strong teaching approaches to biliteracy to be then implemented in elementary classrooms. Historical, political, economic forces shape the possibilities and resources available at Indigenous teaching institutions. Collectively, however, the literature also showed how much these programs and Indigenous preservice teachers have done in their materially constrained contexts. There is limited research about what happens in the Indigenous language teaching classrooms, there is a lack of productive and empowering measures to assess literacy and biliteracy competency, and monitor progress, and there is a lack of collaborative research projects that establish partnership with teacher educators and center the voice of Indigenous preservice teachers.

There is also an opportunity to innovate, as I was not able to identify, in teacher education contexts in Latin America a DBR study. More fundamentally, there is a need to design and implement Indigenous research methodologies that potentially open new windows and build new bridges to Indigenous knowledge and promote the collective generation of knowledge that incorporates strengths and wisdom from different systems and sources of knowledge.

To address the gaps in the literature I proposed DBR study. In the following chapter I describe the dissertation methods and techniques and the rationale for the methodological choices.

Chapter 3 : Methodology and Methods

This qualitative study explored how Indigenous language teacher educators contributed to the development of biliteracy practices in two cohorts of preservice teachers embarked on learning Qom, during one academic year, July 2022-June 2023. The methodology was informed by Indigenous research approaches employing a design-based research model embedded in a research-to-practice partnership with two Indigenous teacher education Institutes in Northern Argentina. Situated in the teacher preparation courses setting, it was centered in the voices and actions of Indigenous language teachers and learners, through a cycle of design, implementation, reflection, and new implementation. The research questions undergirding this study were:

RQ: How do teacher educators contribute to Indigenous preservice teacher' development of biliteracy competencies in two Indigenous teacher education programs (ITEP) in northern Argentina when participating in a design-based research (DBR) study?

1. How do teacher educators of Spanish and Indigenous language enact teaching strategies that create biliteracy practices?

2. What is Indigenous preservice teachers' initial level of biliteracy competency and how does it change in the course of one academic year?

3. How do teacher educators and Indigenous preservice teachers perceive the relationship between their enactment of biliteracy teaching strategies and the development of biliteracy competencies in Indigenous preservice teachers?

4. How are teacher educators' pedagogical decisions influenced by their participation on the co-design of biliteracy teaching and learning?

The chapter is organized into three sections. The first one succinctly situates the methodological approach within current conceptualization of research paradigms. The second section presents the contexts and setting, and the third section explains the research design, data collection, and data analysis procedures.

Situating the Methodology

Methodological choices are a central concern of the scientific enterprise and convey the philosophical assumptions and worldview a researcher brings to the process. As with all research, these choices express a view of reality (ontology), a perspective on what is and how knowledge is generated (epistemology), the values-stance taken by the researcher (axiology), and the procedures selected for the study (methodology) (Creswell & Poth, 2018; Merriam & Tisdell, 2016). I found useful Creswell's (2018) concept of *interpretative frameworks*—a condensation of research paradigms and theories—which enact researchers' beliefs and philosophical commitments. Within social sciences, research was initially categorized following the lines of modern paradigms (traditional experimental and quantitative models) and, in contention, postmodern paradigms. One well-known typology has four main interpretative frameworks: positivism—legacy of physical and natural sciences—, postpositivist—a more nuance approximation to what is real and how to apprehend it—, critical theory—a perspective to critique social reality, particularly oppression, and transform the world—, and constructivism— an emphasis on the constructed nature of all social reality—(Guba & Lincoln, 1994). Following researchers' work in the decades since, more interpretative frameworks have been identified, e.g., participatory, transformative, pragmatism, feminist theories, queer theory, among others (Creswell & Poth, 2018).

As an Indigenous educational researcher, when selecting an interpretative framework, I had three central concerns. First, how to do research from an Indigenous perspective that is both cognizant of the ways scientific research has historically hurt Indigenous peoples and clearly recognizes the contribution of Indigenous knowledges. Second, how to integrate Indigenous research approaches transcending extreme relativism, where each community generates its own truth but renounces to any potential universality in its inquiry of reality. This concern is not in

terms of how generalizability is usually treated in research design, but rather to the possibility that even within the diversity and uniqueness of individuals and communities' realities there exists a common human nature or experience which can be addressed, for example, with principles for teaching or learning, and as such are offered as a contribution to humanity's collective knowledge. Third, how to conduct research that goes beyond a diagnosis of the problem, as important as that is, and moves towards learning from the dynamics of change, with its implicit vision of a better future, connected with social justice aims.

My philosophical commitments have these concerns in mind. Therefore, I aligned with an Indigenous research paradigm complemented with an approximation to critical realism[4] (Creswell & Plano Clark, 2017) which poses a realist ontology with a constructivist epistemology. This is to say that while physical reality might have an existence with certain independence from observers, social reality is constructed by its participants based on premises which might show to be more useful or less useful to the declared goals of individuals and societies. In terms of epistemology, the generation of knowledge is based on the on-going and never-ending effort to comprehend reality, including social reality, by collectives who develop models and theories of the world, which are open to revision and always incomplete and perfectible. The interpretative framework closest to these commitments is a research-to-practice partnerships (RPP) paradigm within which design-based research (DBR) is usually located. I delineate these commitments and their implications for this study, to then turn to the research design, including context, data collection, analysis procedures, and issues of validity.

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[4] I thank prof. Christophoros Mamas for orienting me to critical realism.

Indigenous research paradigm

To address the methodological concerns related to the relationship to Indigenous knowledges, I drew from the field of Indigenous research methodologies which is ample, diverse, growing in literature, and substantial in its challenges to traditional research methods (Bell, 2013; Brayboy, 2005; Cajete, 2004; Kovach, 2009a; Little Bear & Battiste, 2000; Simpson, 2014; Smith, 2012; Wilson, 2008). I identified three main areas in which Indigenous methods expand what might be broadly defined as modern Western scientific research methods: ontological assumptions, epistemological assumptions, and its ethical framework. In terms of ontology, modern scientific methods, historically, have defined themselves by rational thought and a rejection of magical thinking, superstition, supernatural forces, religious beliefs, and a subjacent philosophical materialism. On their part, authors engaged with Indigenous research methodologies have made visible the influence of cultural ideas and practices in shaping how the human mind interacts with reality, expanding in this way notions of rationality that might be culturally biased, and coincided in affirming the existence on non-material reality. This beyond-than-material was sometimes referred to as spiritual, however this term meant different thing to different authors.

Smith explained "[t]he values, attitudes, concepts and language embedded in beliefs about spirituality represent, in many cases, the clearest contrast and mark of difference between indigenous peoples and the West" (2012, p. 78). In this sense, spiritually was highlighted as a marker of Indigenous thought, and was defined as a relational orientation to the universe, to the more-than-human reality (Bell, 2013; Smith, 2012), to ancestors (Wilson, 2008), or to spiritual qualities and forces such as love, respect, kindness, and nobility (Bell, 2013; Little Bear & Battiste, 2000). Indigenous ontologies proposed a holistic reality which included what through modern lenses have been two opposing dimensions, a material and a non-material one.

Indigenous ontology, understood from a Western perspective, was the unified sum of material and spiritual dimensions, and nurtured a sense of sacredness and reverence for nature, each individual life, community life, and a connection to the Great Spirit or divinity through prayer (Ermine, 1995). In this manner, it advanced a holistic and relational way of conceptualizing reality (Kovach, 2009a), foregrounding the interconnectedness of life. One implication it had for this research design was a receptiveness and responsiveness to research participants' spiritual practices and concerns. For example, the use of storytelling interview (Iseke, 2013) included questions oriented to understanding the influence of spiritual practices and beliefs in their educational trajectory and commitment to Indigenous language revitalization. There was also an openness to explore with participants the role of prayer and their relationship to the Creator. While all research participants—Indigenous teachers, students, research assistants, and I—have different beliefs, there was a genuine appreciation for integrating this perspective in the conversations.

Regarding the relational dimension of ontology, one of the objectives and focus of reflection within the research team was the nature of our relationship with Indigenous teachers. We had conversations about how to make explicit our respect for the Indigenous students and teachers' experience and knowledge, and how to avoid tendencies to force or impose our ideas, interpretations, or time demands. This required a delicate balance between joint decision making and planning, and flexibility, while trust was being built and developed. Moreover, this relationality expressed itself in numerous occasions, as the interviews and observations positioned us in a dialogue where many of the interviewees individual or family histories and stories resonated with our own, and we felt free to share and find a deep connection in constructing together a joint space of grief and healing.

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In terms of epistemology, Indigenous research methodologies proposed to transcend

modern fragmented thought, recognizing the intimate connection between the subject and object

of knowledge (Kovach, 2009b), the connection between knowing and being (Wilson, 2008), and

the necessity to disarm traditional hierarchies of knowledge that make Indigenous knowledge

inferior (Million, 2015). These considerations were mirrored by other Western thinkers who have

been interrogating the limits of dominant Western definitions of scientific knowledge (e.g.,

Sousa Santos, 2014). One difficulty in this discussion is the different ways that "knowledge" and

"epistemology" were used in literature. Some authors discussed the abstract concept of

knowledge (what knowledge is, and by extension its demarcation from non-knowledge, e.g.,

Wilson, 2008), others described the importance of different bodies of knowledge—be it cultural

or disciplinary—(Latulippe, 2015; Whyte, 2018), while still others analyzed epistemology as

ways of accessing knowledge or ways of knowing, such as experiential knowledge (Kovach,

2009a), language or storytelling (Brayboy, 2005; Iseke, 2013), and other forms of knowing such

as visions and dreams (Wilson, 2008). The need for conceptual precision is necessary to make

meaning of scientific knowledge and Indigenous knowledge in a comprehensive understanding

of knowledge that also avoids the dangers of extreme relativism, where every claim to

knowledge is considered equally valid, a post-truth perspective that is having disastrous

consequences for social life.

Finally, Indigenous research methodologies authors proposed an explicit ethical

framework for their work: to contribute to the current and future, spiritual and material well-

being of Indigenous communities (Whyte, 2018). Elaborating on the purpose and meaning of

Indigenous research methods, Smith defined the Indigenous research agenda around four

processes through which Indigenous communities navigate: survival, recovery, development, and

self-determination (Smith, 2012). I propose that this transformative and liberatory agenda, centered on building relationships and strengthening individual and collective agency to build our futures, while salient within Indigenous communities is not exclusive of them. Rather Indigenous communities join a growing number of marginalized communities and peoples who are facing similar vital challenges in the current historical juncture.

Research-to-practice partnership paradigm

To address my third methodological concern, the need to transform educational reality and not only describe it, I drew from research-to-practice partnership and design-based research. In response to a perceived disconnection between academic research and educational policy and practice, in the last two decades, research-to-practice partnerships (RPP) has emerged as a research paradigm that delineates an area of action for universities concerned to articulate their work with the urgent educational needs of a specific context (Coburn et al., 2021; Coburn & Penuel, 2016; Farrell et al., 2021). RPP are defined as long-term alliances between a research-oriented organization—such as a university—and a practice-oriented organization—such as a school district, community, museum or other educational organizations—with the goal of addressing a problem of practice, generating new knowledge, building capacity, and informing action in a way that explicitly addresses educational improvement or equitable transformation (Coburn et al., 2021; Coburn & Penuel, 2016; Farrell et al., 2021). RPPs are centered on research, however, they engage in that activity with the goal of changing the usually hierarchical relationships between researchers and research subjects, by including all as members of a research-practice team and jointly decide key aspects of the RPP project (Farrell et al., 2021). Finally, aligned with their participatory and collaborative nature, RPPs aim to leverage a diversity of expertise and actors, where academic knowledge is one among several sources of knowledge.

In Latin America, the connection between educational research and practice has been traditionally understood within the context of one of the three main goals of the modern university: teaching, research, and outreach (Mato, 2020; Ramírez Gallegos, 2010). The implementation of neoliberal policies since the 1990 has weakened universities resources and possibilities to engage in outreach. However, Latin American universities' social commitment is still carried through its outreach activities by public universities who see themselves as a fundamental part of a social development project and critical actors in the transformation of social inequalities. In newly created intercultural universities, the orientation towards building more equitable relationships and generating new knowledge is part of its foundational mission (Cano Menoni, 2015; Mato, 2014, 2016). In this regional context, collaborations similar to RPP were found.

Design-based research

Closely related to RPP, design-based research (DBR) evolved in a parallel and connected manner, as a research methodology that could effectively bridge academic research and practice in formal and informal educational settings (Anderson & Shattuck, 2012; Collins et al., 2004; O'Neill, 2016; The Design-Based Research Collective, 2003). DBR shares the following characteristics with RPP: being situated in a real educational context, involving a collaborative partnership between researchers and practitioners, and aiming to have a practical impact on practice (Anderson & Shattuck, 2012). DBR's specificity is the focus on the design and testing of a significant intervention (e.g., a learning activity, a type of assessment, a course, an administrative arrangement, or a technological intervention, among others) through iterations (Brown, 1992) and the development of practical and substantive design principles that not only answer local needs but advance a theoretical agenda (Barab & Squire, 2004; Engeström, 2001). In DBR projects, researchers have a dual role of curriculum designers and curriculum theorists,

learning from the implementation of each proposed intervention (Armstrong et al., 2018; Barab & Squire, 2004). On their part, research participants are viewed as co-researchers whose input is necessary to formulate the research question, refine the design, evaluate the experiment, and report the results (The Design-Based Research Collective, 2003). Additionally, DBR favors a mixed-methods paradigm for conducting research (Anderson & Shattuck, 2012; Ryu, 2020).

DBR aligns with a pragmatic philosophical approach by which the value of a theory is measured by its capacity to produce the desired change in the world (Barab & Squire, 2004; Confrey, 2005). Potentially, this could mean that DBR could be conducted without or with minimal engagement to issues of equity, one of the main weaknesses observed by critical scholars. However, there is a growing number of scholars who have made explicit the ethical commitments towards building a more just educational system and transform classroom practices to build more equitable learning experiences that guide DBR studies (Bang & Vossoughi, 2016; Gutiérrez & Jurow, 2016; Penuel, 2019). In this same light, DBR is open to many theoretical perspectives about learning and change, however it has been mostly used within the learning science community (Confrey, 2005; O'Neill, 2016) drawing from sociocultural theories that conceptualize learning as a social process prioritizing the influence of peers, caregivers, culture, and context (Vygotsky, 1978). While DBR [Investigación basada en diseño or IBD by its Spanish acronym] is still emergent in educational research in Latin America, there is a strong tradition in the region in sociocultural theories and action research approaches that share some core assumptions about learning and the collaborative and interventional nature of educational research (Murillo & Martínez-Garrido, 2019).

One of the main advantages of DBR is its capacity to incorporate the affordances of real-life educational settings. This is sometimes referred to as ecological validity (Barab, 2014). This

requires an adequate description of the contextual factors where DBR is conducted and a measured use of time and resources in the co-design and implementation of intervention. In this sense, unrealistic or disproportionate resources investment—compared to the specific context history—would be detrimental for consideration of the research findings by the community of educators. Nevertheless, DBR lends itself, by its iterative and systematic approach, to explore the multidimensional and ever-changing nature of real learning environments, while abstracting design principles that encapsulate what is valuable in a successful learning intervention.

In summary, I chose to conduct a DBR study as its redefinition of the relationship between researcher-practitioner reverts the top-down trend in educational research—necessary in teacher education research particularly—and cultivation of a humble learning attitude, based on the goal to generate knowledge through designing, implementing, reflecting, and refining a learning intervention in real educational contexts. More fundamentally, it extends our understanding of a scientific approach offering a perspective that complements experimental and laboratory research with the need for naturalistic settings and dynamic and complex real educational context (Akkerman et al., 2021; Lewis, 2015; Penuel et al., 2011). However, its pragmatic philosophical underpinning, while flexible, also demands an explicit ethical framework, which in my case is centered on educational transformation, the process of building collective unified action based on a diversity of perspectives and actors, and a conceptualization of justice informed by Indigenous thought, the search for a more just future for Indigenous communities.

Research Design

I conducted a design-based research study (Barab & Squire, 2004; Creswell & Plano Clark, 2017) informed by Indigenous research methodologies (Iseke, 2013; Smith, 2012). The

research approach was qualitative. The unit of analysis were the practices conducted by teachers and learners in Indigenous language courses in teaching institution in northern Argentina, with the goal of developing biliteracy.

Research Setting

In Argentina, Indigenous communities are concentrated in the northern provinces, and in the south with the Mapuche nation, with a growing number of Indigenous people migrating to the proximity of Buenos Aires and Rosario cities. I selected Chaco province, as it has been one of the most progressive in terms of legislation for Indigenous languages and Indigenous education, in comparison with other northern provinces (Hecht & Schmidt, 2016). Although much is still needed, advances to date have accumulated experience to reflect upon. Chaco province in Northern Argentina has a population over 1 million people, of which 3.9% ($n = 41,304$) self-identify as Indigenous, the three most important Indigenous peoples are Qom ($n = 30,766$), Wichí ($n = 4,629$), and Moqoit ($n = 3,872$), information collected in the last census of 2010 (INDEC, 2017). Teacher education programs to train Indigenous teachers were initiated in 1987 and received impetus with the adoption of Intercultural Bilingual Education Policy throughout Latin America in the 1990s. Teacher education is offered in postsecondary non-university institutions that require a high school diploma and prepare teachers with a two- or three-year degree. Currently, there are close to 50 higher education teaching institutions operating in the province, a dozen of which offer Intercultural Education degrees (see map in Appendix A.1).

Regarding Qom language, modern linguistic studies describe Qom language situation pre-contact, as a continuum of language variance across the territory with core intelligibility maintained through the flow of people, i.e., traveling, gatherings, and intermarriage (Censabella,

1997; Messineo, 2011). Beginning in the 1950s decade, this dynamic system received an influx of new actors, Christian missionaries. Specifically, Mennonite Church missionaries prioritized the study and learning of Qom language in their conversion efforts. For evangelization purposes, it was necessary to systematize Qom language, to develop and promote the written dimension of language, and to identify the most prevalent Qom dialectal variety to translate the Bible to (Almiron & Padawer, 2021; Altman & Messineo, 2021). With the assistance of trained linguists and Qom speakers, members of the church elaborated a descriptive study of Qom grammar, including a vocabulary, developed an alphabet, and through a decades-long process a translation of the Bible took place. This progressive approximation to describe Qom language, including its dialectal varieties, continued since the 1980s, this time led by linguists without religious affiliations. While achieving some stability in recent decades, there are still differences in the alphabets circulating in the teacher preparation institutions.

On its part, Wichí language has the majority of its 50,000 to 80,00 speakers in the provinces of Salta and Formosa (Lundt, 2016). Similarly to Qom, there is a continuum of dialectal varieties across the territory (Nercesian, 2020) including a group of 4,000 speakers living in Bolivia who self-identify as Weenhayek (Alvarsson, 1988). Wichí language was systematized earlier, in 1910 by Anglican missionaries who established themselves in the province of Salta (Lundt, 2016; Palmer, 2005) (see Appendix A.2. with a map of both communities and dialectal varieties). The last censual information about Indigenous languages indicated that in the provinces of Chaco, Formosa and Salta, among individuals who self-identified as Wichí or Qom the percentage who spoke the language was 93,6% and 78% respectively (INDEC, 2005).

Teacher Training Colleges

The selection criteria of the two research field sites was driven by an initial assessment of programs that had some years of implementation ('maturity'), have been considered valuable by Indigenous actors, and represent a variety of experiences: private/public partnerships, rural/urban (reflecting current demographic trends, cf. Weiss et al., 2013), one/multiple Indigenous groups, etc. The initial assessment was elicited through informal interviews with Indigenous actors (representing experts' opinion, a group of ten leaders and teachers active in the region) as containing elements, conditions, or relationships congruent with their perspectives of a favorable, successful, or effective educational experience. I selected two sites to further the RPP and have a letter of agreement from the authorities of each teaching institution. I conducted recruitment of teacher educators during July 2022.

Participants

Language teachers

In both research sites Indigenous language teachers and Spanish language teachers associated with the same student cohort were asked to be interviewed (see Table 2 for list of language teachers intervieweed). Then, in each teaching institution I invited two teacher educators—one Spanish language teacher and one Wichí or Qom language teacher—who taught the same cohort of Indigenous preservice teachers, a group of approximately 15-20 to participate in the co-design aspect of research. Specifically, teacher educators were invited to attend co-design workshops and reflective interviews. Although Spanish language teachers accepted, I only advanced to do classroom observations, and we did not co-design an artifact together. The core teachers for the DBR study were three: Wuyes, Pumjwa and Imalaq (all pseudonyms).

Indigenous preservice teachers

Indigenous pre-service teachers were invited to beginning- and end-of-the academic year group interviews and assessment of their Spanish reading comprehension. Participation was voluntary. In the urban site, a group of 10 students from the degree of early childhood education participated in the interviews, observations, and assessment. They had started classes later, so their academic year coincided with the study's timeline (August 2022-July 2023). In the rural site, a group of 27 students from the degree of elementary school teachers participated in the same activities. However, as their academic year went from March to November, in the second iteration (April-July 2023) the group changed Indigenous teachers from Wuyes to Lapel. Therefore, I decided to continue classroom observations to follow both, student cohort with a new teacher (Lapel) and the same teacher Wuyes with a new group of students.

Indigenous researchers' team

During fieldwork, four Indigenous local professionals collaborated with the research project and met monthly to discuss theory, methods, the process of data collection, on-going analysis, and findings. Three were Wichí-Cariña and one was Qom-Moqoit. Their disciplinary training included cultural management, library sciences, early childhood development, and geography education.

Data Collection Procedures

I conducted fieldwork in the second semester of 2022 and first semester of 2023. These are identified as iteration 1 and iteration 2. The academic calendar in the province of Chaco, Argentina starts in April and ends in early December of each year, with a two-week Winter break in July. During July 2022, I conducted three preparation activities: teacher educators' recruitment, research assistants training, and protocol validation. Then, iteration 1 took place between August-December 2022 and iteration 2 between April-July 2023 (see Table 1).

Table 1.
Data collection timeline

	Activities
Iteration I	
July 2022	Validating research protocols Training research team Meeting teacher training college's authorities Informative meetings with teachers Teacher recruitment
August 2022	Storytelling interviews
August – November 2022	Weekly meeting for classroom observations Co-design meetings Student focus group Spanish reading comprehension assessment
December 2022	End-of-year interview with teachers
Iteration II	
March 2023	Preparatory meetings with research team
April – June 2023	Co-design meetings Weekly meeting for classroom observations Qom language workshop Spanish reading comprehension assessment
July 2023	End of data collection

Procedures for Collecting Each Type of Data

Storytelling interview

Telling stories is a universal human practice, highly valued across cultures and time. In Indigenous communities, storytelling has particular significance as a vehicle for learning about life, witnessing and remembering, and sharing stories of spirituality as sources of strength (Iseke, 2013). Stories "are not separate from theory; they make up theory" (Brayboy, 2005, p. 439), in this sense, storytelling is a tool for collective theorizing. In this approach, stories are meant to be heard and felt, and the onus for understanding is placed on the hearer (Brayboy, 2005). Smith explains that intrinsic to storytelling is "a focus on dialogue and conversations amongst ourselves as indigenous peoples, to ourselves, and for ourselves" (2012, p. 146).

In practical terms, a storytelling interview demanded to build a relationship, a space, and a time for a significant conversation. It also demanded respect for the interviewee's use of time

and daily responsibilities, and to be flexible for the interview to be conducted as the interviewee
desires it, walking, sitting, or sharing an activity, individually or in a group, depending on the
relationship between the teacher educators. See Table 2 for a list of teachers interviewed.

Table 2.
List of language teacher educators interviewed

	Pseudonym	Age	Gender	Language taught	Research site
1	Wuyes*	+50	Male	Qom	Rural
2	Atom	40-49	Male	Wichí	Rural
3	Pumjwa*	+50	Male	Wichí	Rural
4	Lhamtes	40-49	Male	Qom/Arts	Rural
5	Khates	+50	Female	Qom	Rural
6	Lapel	30-39	Female	Qom	Rural
7	Nala	30-39	Female	Qom	Urban
8	Imalaq*	40-49	Female	Qom	Urban
9	Iss	40-49	Male	Qom	Urban
10	Rarala	+60	Male	Qom	Urban
11	Chot	+50	Male	Qom	Urban
12	Khey	+50	Male	Qom	Urban
13	La	+50	Male	Qom	Urban
14	Viyen**	40-49	Female	Spanish	Rural
15	Bashe**	20-29	Female	Spanish	Rural
16	Lewoj	+50	Female	Spanish	Urban
17	Qovi	20-29	Female	Spanish	Urban
18	Chohot**	30-39	Male	Spanish	Urban
19	Chiyowe**	20-29	Female	Spanish	Urban

Note: * Language teachers who participated in the DBR.
        **Spanish language teachers in both institutions were substituted.

Guided by the uses of storytelling in Indigenous communities, the interview protocol
developed (see Appendix B.1) invited the individual to share his/her story situated within their
community, their preferred Indigenous stories, and welcomed talking about dreams and futures

(Iseke, 2013, pp. 562–563). The questions allowed me to explore teacher educators' philosophy of teaching as it related to the roles of teachers and students, process of learning, and the specificity of literacy teaching. While I propose the universality of storytelling practices, and used the same protocol only skipping two questions, for non-Indigenous teacher educators, there were differences in how Indigenous teachers and criollos teachers reacted, most significantly Indigenous teachers' interviews averaged an hour and a half, and Spanish language teachers averaged half an hour. The interviews were audio recorded with permission and later transcribed.

Classroom observation

Observations as a research tool is the systematic observation of a naturally occurring phenomenon, to answer specific research questions coupled with the use of techniques to strengthen the trustworthiness of the results (Merriam & Tisdell, 2016; Yin, 2018). While interviews provided an account of actions and their personal interpretation of reality, direct observation offered access to the occurrence of certain types of behaviors in selected periods of time. In this case, I asked each teacher educator to select a one-hour classroom lesson, rich in literacy teaching and learning, to be observed. To register the observation, I wrote fieldnotes or video recorded them and collect artifacts (Yin, 2018) produced during the lesson such as teacher educators blackboard writing, worksheets, Indigenous preservice teachers samples of writing, among others. Afterwards, classroom observations were transcribed for analysis and translation (from Qom to Spanish). See Table 3 for a list of classroom observations selected to report on the dissertation. See Figure 2 for an illustration of how video recording was conducted.

Table 3.

Classroom observations collected

	Research site	Pseudonym	Language course	Date	Collection mode	Duration	Topic
1	Rural	Wuyes	Qom	09/08/2022	Written	87 minutes	Qom words
2				09/15/2022	Written	60 minutes	Qom words writing
3				09/22/2022	Written	30 minutes	Writing up phrases
4				10/13/2022	Video	21 minutes	Reading in Qom/Spanish & Word games
5				04/27/2023	Video	70 minutes	Group organization by language & *acechedario*
6				05/04/2023	Video	50 minutes	Linguist's visit & story reading
7				06/01/2023	Video	65 minutes	Writing up phrases
8				06/08/2023	Video	36 minutes	Verbs in infinitive. Human body vocabulary
9		Bashe	Spanish	10/24/2022	Written	95 minutes	Types of Qom stories
10	Urban	Imalaq	Qom	10/13/2022	Written	40 minutes	Qom alphabet (acechedario)
11				10/20/2022	Written	172 minutes	Qom alphabet (acechedario)
12				10/27/2022	Video	73 minutes	Qom vocabulary
13				11/03/2022	Video	66 minutes	Reading (words)
14				05/03/2023	Video	70 minutes	Phrases in Qom. Greetings & short requests
15				06/28/2023	Video	69 minutes	Short requests
16		Chohot	Spanish	11/15/2022	Video	72 minutes	Qom stories analysis and theater representation
17		Chiwoye (substitute teacher for Chohot)	Spanish	05/22/2023	Written	101 min	Orality and literacy. Collective reading Walter Ong
18				05/29/2023	Written	60 minutes	Coherence & cohesiveness. Textual genres
19				06/26/2023	Video	37 minutes	Textual genres
20				07/03/2023	Video	31 minutes	Textual genres. Reading aloud texts written by the students

Figure 2. Video recorded classroom observation

Group interview

Group interviews were a useful method for collecting qualitative data about the group of Indigenous preservice teachers' perceptions, opinions, and experiences. In contrast with individual interviews, the focus is on the group setting, and the insights generated by the interactions (Merriam & Tisdell, 2016). Group interviews are preferable to discuss public topics and shared experiences. The group interview protocol consisted of seven questions (see Appendix B) about Indigenous preservice teachers' education trajectory, biliteracy knowledge and experiences, and visions and dreams for the future. The whole cohort was invited for the group interview, but the number of participants was less than 10 each time. Group interviews were audio recorded and then transcribed for analysis.

Spanish reading comprehension test

In teacher education programs, language and literacy assessment are common practices both to assess preservice teachers' growth and as a content to learn how to develop tools to assess the future students' growth. In Indigenous context, language assessment is part of the application process to identify the level of linguistic competence in those languages. However, currently there are few validated measures to assess literacy skills in Spanish for university level (Uribe Álvarez & Camargo Martínez, 2011) and there are none for Indigenous languages (Wichí or Qom). Therefore, for Spanish literacy I chose one systematized and published assessment tools for reading comprehension developed for teacher educators with a formative assessment approach.

The Spanish reading comprehension test for preservice teachers was developed under the project "For a systematic teaching of reading and writing in high school and first year postsecondary teaching institutes in areas with vulnerable populations in the city of Buenos Aires and suburban areas" financed by the University of Buenos Aires Science and Technology grant (UBACyT by its Spanish acronym) 2004-2007, directed by Elvira Arnoux (2006a, 2006b, 2007). The test objectives were to: (a) diagnose discourse skills at understanding and producing explanatory theoretical texts, focused on macro-structure comprehension and summary writing skills, and (b) diagnose reading meta-comprehension ability. The research team's objective was to characterize preservice teachers' current literacy—reading and writing—competency as a source of information to design an intervention to enhance that same competency for that specific population.

The test was developed based on textual linguistics and discourse analysis (Dijk, 1980), literacy as a social practice, and sociocultural approach (Vygotsky, 1978), which aligns with this

research proposal conceptual framework. An authentic text was selected by the research team and slightly edited. The type of text was an explanatory theoretical text characterized by a structured exposition of a concept within a disciplinary domain independent of its practical implementation. The content—constructivism—was chosen due to its circulation in teaching education contexts. The extension was 410 words organized in six paragraphs. Paragraphs were numbered for the test. Test tasks were scaffolded to require reading and re-reading of the text to achieve higher reading comprehension.

The instrument was a paper and pencil test and was individually answered in a group setting. The administration time was 40 minutes. It consisted of 10 items with a total of 10 points (personal communication, Noguera, 2023). The test has not been standardized, but it was applied to a similar, although urban and non-Indigenous, population as the research participants in the current research project: first-year preservice teachers. The sample was 108 preservice elementary teachers (73 first year and 35 second and final year), with an average of 24 years old, residing in 11 localities in Buenos Aires, in the years 2004-05 (Arnoux et al., 2006b, 2006a). Additionally, the sample for items a, b, c, and d was complemented with 65 fourth-year preservice teachers, residing in 9 localities in Buenos Aires (Arnoux et al., 2007). I found that the similarities in purpose, theoretical stances—text linguistics and discourse analysis to understand literacy and sociocultural approaches to conceptualize learning—, and population to research with—teacher educators and preservice teachers—were decisive in choosing this instrument to explore Spanish literacy competency in Indigenous contexts.

Fieldnotes

Finally, fieldnotes (Emerson et al., 1995) were used to capture classroom observations and other college events when no audio or video recording was possible or advisable. During the monthly meetings, fieldnotes were shared among the research team and commented, as a way of

increasing the quality of what was reported and reflected on the content and the technique. See

Table 4 for a summary of the research questions and the data collection techniques employed.

Table 4.
Alignment between data and research questions

Research Questions	Data Used in Analysis
RQ1: How do teacher educators of Spanish and Indigenous language enact teaching strategies that create biliteracy practices?	-Transcribed storytelling interviews -Video and video transcriptions of classroom observations -Classroom observations fieldnotes -Teacher and student artifacts
RQ2: What is Indigenous preservice teachers' initial level of biliteracy competency and how does it change in the course of one academic year?	-Spanish literacy (reading comprehension) assessment instrument -Transcribed student focus group -Transcribed teacher end-of-year interviews
RQ3: How do teacher educators and Indigenous preservice teachers perceive the relationship between their enactment of biliteracy teaching strategies and the development of biliteracy competencies in Indigenous preservice teachers?	-Transcribed student focus group -Transcribed teacher end-of-year interviews
RQ4: How are teacher educators' pedagogical decisions influenced by their participation on the co-design of biliteracy teaching and learning?	-Co-design fieldnotes -Transcribed teacher end-of-year interviews -DBR products -Fieldnote about Qom language teacher workshop

Procedures for Analysis
Constructing the Database

Data management was an important dimension of the research team's effort and an aspect

highly valued as a research training experience. A shared master document allowed the team to

report weekly the data collected. Audio and video were kept on two external drives offline.

Anonymized transcripts were uploaded to a qualitative software for coding by two researchers

(*Dedoose*, 2023). Video recorded observations were hand-coded with the support of an Excel

file.

Analyzing Data in the Database

Two main analytic procedures were followed qualitative coding identifying themes and video coding.

Text coding

After each storytelling interview there was a short informal exchange about the environment created, the content of the interview, and the relationship with each interviewee. Then, each interview was transcribed. We further anonymized the transcript, printed it and uploaded the files in Dedoose.

I and another researcher, based on a reading of the interviews and the research questions, created an inductive codebook (Borda et al., 2017; Saldaña, 2009). We fully coded one interview separately, and then had a meeting to analyze our convergences and divergences. We discussed the codes, discarded some, identified new ones, and found examples to illustrate the meaning covered by the codes. Then, each researcher coded five interviews. We then grouped codes to find some patterns or main themes (Merriam & Tisdell, 2016; Saldaña, 2009) (See Appendix C for codebook).

Video coding

Video analysis had four iterative steps: preparation for coding, codebook development, coding, and sharing of preliminary findings with the research team and Qom language teachers.

Preparation for coding. For the video-recorded and transcribed classroom observations, I followed these steps: (1) selected the start and end point of each segment based on: a change of topic, activity, or text; (2) located all instances of Qom use or conversation/references about Qom. As Spanish was dominant, locating all instances of Qom use showed me when bilingualism occurred during the classroom observations; (3) identified if there is mention or use of 'print' (written dimension of language), to indicate the presence of literacy. The three steps

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allowed segmentation by literacy event and combined with the previous step pointed towards print biliteracy events as a precursor for biliteracy practices.

Codebook. Based on the concepts of literacy events and literacy practices as proposed by Barton & Hamilton (2012), and Purcell-Gates et al. (2011), and the continua of biliteracy framework by Hornberger (1990), I adapted codes offered by those researchers and developed the codebook (see Appendix C). Three important definitions were:

- *Print literacy event*: actions and activities when a print text is read or written. In this definition print refers not exclusively to paper medium but "printed symbols/signs such as letters which can also occur within digital or visual media texts)" (Purcell-Gates et al., 2011, p. 411). Literacy event is "any occasion in which a piece of writing is integral to the nature of the participants' interactions and their interpretative processes" (Heath, 1983, p. 50).

- *Literacy practice*: "the ways that people within the specified context engage with literacy, defined primarily as print literacy events… and the social, cultural, and political contexts within which they occur (e.g., filling in job applications, helping children with homework, reading a recipe, etc.)" (Purcell-Gates et al., 2011, p. 411). Includes social models of literacy that participants bring to bear upon those events and that give meaning to them.

- *Biliteracy practice*: "any and all instances in which communication occurs in two (or more) languages in or around writing" (Hornberger, 1990, p. 213).

Coding. I hand-coded each video watching them and supported by the transcription, employing the codebook. The more circumscribed concept of print literacy event was the basic unit, which coherent with its conceptual framework based on NLS was intended to be analyzed

as part of a literacy practice, i.e., within specific cultural contexts. Then, I checked if the event

involved more than language. Finally, in analyzing the video and reading the transcription I

checked when there were other instances of communication in two languages that referenced

printed texts or literacy practices outside of the immediate context. This allowed me to identify

six biliteracy practices using the codebook.

Sharing of analysis. Initial rounds of biliteracy practices were drafted and shared in a

research team meeting, then with one of our collaborators, a Qom language teacher, and

presented for discussion at the Qom language workshop.

Issues of Validity, Reliability, Trustworthiness of Data
Internal Validity

Validity refers to the correspondence between research findings and reality. In the

qualitative techniques selected (classroom observation and different types of interviews) validity

or credibility refers to how accurately the findings reflect participants' behaviors, attitudes, and

opinions (Merriam & Tisdell, 2016). To address these issues, the research design considered a

triangulation of data and methods strategies. Triangulation refers to the research process of

comparing and contrasting multiple sources of data and analysis to refine the understanding of

the observed phenomenon (Merriam & Tisdell, 2016). There are at least four strategies: data

triangulation, methods triangulation, investigator triangulation, and theory triangulation

(Merriam & Tisdell, 2016). In my design I used data triangulation collecting data about the same

biliteracy practices from different actors: Indigenous preservice teachers and teacher educators,

and at different times: at the beginning, during, and end of the DBR study. In addition, I used

methods triangulation by employing video and fieldnotes data collection techniques. In DBR

studies, validity is also addressed by the partnership and the iterative process of co-design, data

analysis, and refinement of the intervention (The Design-Based Research Collective, 2003) already considered in the research design.

Reliability and Trustworthiness

To enhance reliability and trustworthiness of data I conducted a members' check meeting at the end of the second iteration. Members' check refers to the procedure or space design for research participants to provide feedback about preliminary research findings (Merriam & Tisdell, 2016). However, as researchers have observed, research participants are in the liberty of responding or not to that request and there is also freedom in the way that the final research report will reflect research participants input in a members' check meeting or procedure (Stake, 1995). At least two Indigenous language teachers, Wuyes and Imalaq, participated in these meeting. In respect to reliability, as DBR studies already address this need, I shared preliminary analysis of biliteracy activities and strategies, as well as language teaching activities, observed during the first iteration. Teachers provided feedback, corrections and had questions about the findings which led to refining the co-designed artifact and the codebooks for analysis.

Generalizability

The purpose of DBR is to provide a detailed and rich description of the phenomenon to inform the educator about the results, share process insights, and allow him/her to make conclusions about potential transfer of knowledge to new contexts of design principles (Barab, 2014). In this sense, generalizability does not refer to the quantitative approach of selecting a representative sampling to support statistical generalization of findings, but rather an effort to "provide rigorous empirical grounding to theoretical claims and explanations" which are valuable to others "because of its emphasis on exposing mechanism and its articulation of the conditions which these mechanisms were realized" (Barab, 2014, pp. 152–153). Similar to improvement science's challenge to controlled experiment design to encompass real world

complex and dynamic phenomena—its messiness—(Lewis, 2015), DBR also proposes generating knowledge aware of situatedness and context, but that through systematic reflection—facilitated and empower by diverse groups of researchers—abstracts the design principles and features that make the intervention more likely to be have the capacity to adapt to a new context and, therefore, be replicated.

For this DBR study, findings were thought of as initial evidence-based claims about how teacher educators and Indigenous preservice teachers designed, enacted, and reflected on biliteracy practices, conducive to an equitable learning of both languages.

Ethical Issues and Role of the Researcher

There were three important ethical considerations, Indigenous cultural protocols, collaboration, and authorship. An important aspect of this research design was to answer simultaneously to Indigenous ethical and cultural protocols, and university research ethical guidelines regarding consent and confidentiality. Smith (2005) described how the work in Indigenous contexts has to be centered on the cultural values of each Indigenous communities, particularly those values that prevent an extractive and colonial relationship between researcher and participants. Reflecting on Māori practices that, while not part of researchers' code of conduct, are prescribed for Māori researchers in cultural terms, included values such as respect for people, being present, capacity to listen first, to be generous, and to be humble when sharing knowledge (Smith, 2012, p. 124) which are similar to Qom and Wichí cultural values. There was an acknowledgement of how time is managed in different contexts.

In terms of collaboration, one important ethical aspect was how to navigate the usual unequal power dynamics between university researchers and community members. The necessary negotiation of roles within the project cannot assume that the responsibility for carrying out the research will not be the researchers' main one. At the same time, there was a

spectrum of minimal participation towards co-authorship of research findings and practitioners'

materials based on the research findings to which research participants agreed with the

participants.

Regarding authorship, there was the dual challenge of protecting confidentiality and

disseminating research findings. Initially, in published academic materials all names of teachers,

students and colleges have been anonymized as well as places. However, for publication for a

practitioner's audience, and sharing the specific co-designed artifacts, authors have autonomy to

decide if and how they want to be identified. Indigenous language teachers are owners of the co-

designed artifacts and could share them as they see appropriate.

Limitations of the Study Design

The design of the study has several limitations. The sample size, 12 Indigenous teachers

interviewed, 2 Indigenous teacher educators for classroom observations and co-design, and 9

Indigenous preservice teachers was not representative of the whole population of Indigenous

teachers and students. In addition, participation was voluntary which might have led to self-

selection bias as teacher educators and preservice teachers who agreed to participate were

already more inclined to reflect and refine their practices.

Furthermore, complex processes of learning, such as those related to language and

literacy competencies, are better understood with wider timeframes, for example the whole cycle

of teacher education: four years plus integration to the workforce follow-up. This research

focused on one academic year. The on-going Covid 19 pandemic disrupted all educational

systems, changing established practices and routines, creating new ones, and making uncertain

what will happen post-pandemic. In this shifting and dynamic situation, data collected, and

findings have to be adequately framed for future reference. Finally, one important limitation is

that I am not fluent in Qom nor Wichí, however interview and classroom observations were

transcribed, and Indigenous translators completed the transcription and translation when the Indigenous language was spoken.

Conclusion

This study has implications for the education of Indigenous teachers, preservation of linguistic diversity, and teacher education in multilingual contexts, through the characterization of the mechanisms that promote transformative biliteracy practices and the strengthening of teacher educators' reflective and collaborative approach to biliteracy teaching. I seeked to combine an insider's perceptions and sensibilities when researching my own Indigenous community, an understanding of culture as created and re-created daily by individual and community actors, and a dynamic conceptualization of biliteracy that allowed me to explore how to meaningfully develop biliteracy competencies in ways that contribute to cultural preservation and also strengthens Indigenous teachers capabilities to participate strategically and effectively in the greater society writing their own futures.

Chapter 4 : Findings – Biliteracy Practices in Action

In Argentina, the introduction of an educational policy favorable to teaching Indigenous languages in the mid-1980s created the need to support Indigenous educators who were speakers of these languages. As Indigenous languages officially entered the school, it was expected that their use would help Indigenous children to learn, and teachers would promote the Indigenous languages in their oral and written forms. Biliterate teachers would support the development of biliterate students. Teacher training colleges, therefore, were in charge of preparing these biliterate individuals. In this chapter, through the analysis of classroom video recordings of language courses at teacher training colleges, and storytelling interviews with language teachers, I examined how language teachers created, developed, and sustained biliteracy practices and how Indigenous language teachers' personal and educational trajectories were related to those practices. In this chapter, I address the first research question: *How do teacher educators of Spanish and Indigenous language enact teaching strategies that create biliteracy practices?* The chapter is organized into two sections, the first one describes the biliteracy practices identified and the second one focuses on the biliterate actors promoting those practices, the Indigenous language teachers.

Biliteracy Practice in Indigenous Teacher Education

Biliteracy practices were defined as instances where communication occurred in or about printed texts, reading or writing, in two languages, in this case, Qom and Spanish (Hornberger, 1989, 2017). For example, to read a Qom story and discuss its meaning in Spanish, to write Qom words and their Spanish equivalent, or to talk in Spanish and write down a word or phrase on the blackboard in Qom. In all these examples, both languages were present, and a written text was necessary as the basis or focus of the interaction. The written text also included digital mediums, a few times a digital file shared by instant messaging services or a WhatsApp message. For

analysis, classroom videos were divided into segments marked by a change in activity, text, or participants with a duration ranging from 1 to 13 minutes, averaging 8 minutes. Then exclusively oral segments and exchanges not relating to literacy were excluded. I checked that all remaining segments had biliteracy events (i.e., moments when a text or literacy activity was central to the segment and two languages were present, either as the content of the text or in the communication around literacy). I hand-coded these segments with codes (see Appendix B) that characterized actors, activities, texts, exchanges, and meanings organized around the printed text (Hornberger, 2017; Purcell-Gates et al., 2011).

Practice referred to conceptualizing these activities, interactions, and texts within their social uses and meanings, making explicit the values, attitudes, feelings, and social relationships (Street, 2003, 2011) constitutive of biliteracy practices in different cultural and social contexts. Coherent with my conceptual framework, attention was also paid to the cognitive dimension of the biliteracy practice, characterizing what was asked and expected during these practices in terms of literacy activity and cognitive demand (more details on data analysis procedures are provided in Chapter 3). The concept of literacy practices is the effort to make visible the connection between the activities of reading and writing and the social structures in which they occur, but which are also influenced by these activities (Barton & Hamilton, 2012). Finally, the continua of biliteracy framework, particularly the content continuum (i.e., what is used to teach biliteracy, how practice incorporated minority or majority literacies, vernacular or literary texts, and contextualized or decontextualized knowledge) and the development continuum (i.e., from the perspective of the students, were they expected to be receptors or producers of language, employ oral or written skills, in Spanish their L1 or in Qom L2) were used in the analysis. In this manner, I identified six biliteracy practices (see Table 5), which I present in the following

sections describing how reading and writing were used, the text or materials employed, and the

meanings I ascribed to each practice.

Table 5.

Biliteracy practices in Qom language courses

Biliteracy practice	Uses and activities	Text and materials	Meanings
School teacher literacy	Writing on the blackboard to transmit knowledge, explain, exemplify, organize the class session, and play. Main input of written Qom.	Text written in school format (date, title, content) to be copied. Isolated words or phrases. Blackboard in front of the class, focus point of oral exchanges.	Blackboard writing is a source of teacher authority, symbolic of language expertise, writer identity, and mastery of school literacy.
Breathing life to Qom lataq	Round-robin reading of complex texts, generally above readers' Qom language knowledge.	Published Qom stories. Booklets (photocopies or digital copies) with few black and white images.	Contribution to Qom identity, pride in the heritage, and language-sustaining efforts.
Entering spaces and coordinating action	Reading, writing, and using Qom words and phrases to coordinate simple actions.	List of phrases in digital files, photocopies, or lists on the blackboard for students to read, memorize, and use.	Introduction of Qom for class management.
Literacy-mediated storytelling	Discussion about Qom stories is the focus. Students are asked to write in Qom, or Spanish to be translated to Qom.	Qom stories are recreated by students with a focus on reflecting. Students write in their notebooks.	Qom stories as channels for cultural knowledge, values, character education, and promoters of critical thinking.
Translating	Exercises of translation, more often words and phrases, for public display or students' benefit.	Bulletin board or similar.	Reaffirmation of Indigenous language presence in schools.
Becoming Qom experts	Exposition of examples on Qom vocabulary, phonology, or seldom syntax, to illustrate Qom's difference from Spanish and highlight its difficulty.	Varied texts and materials: blackboard, piece of paper, comment on published texts.	Validation of linguistic expertise and equal status of Indigenous languages in terms of linguistic complexity.

One of the first overall findings was that the biliteracy space—consisting of biliterate

actors, events, and practices—was present in Indigenous language courses and absent in the

Spanish language courses. Spanish language course content was oriented toward language as a

field of study and implications for teaching (e.g., children's language acquisition process, how to use theater for learning, the model of communication, genres of text). While all classes had references to Indigenous cultures, such as cultural knowledge, customs, and importance, Indigenous languages, oral or written, were not part of the class. This finding is further analyzed in the discussion chapter as a contextual element that hinders collaboration between language teachers in contributing to the development of biliterate individuals. Therefore, in the identification of biliteracy practices, I focused on two Qom language courses (i.e., Wuyes's and Imalaq's classes) with supplemental evidence from three other Qom teachers (Lapel, La, and Nala).

School Teacher Literacy

Language teachers taught using a blackboard to write their lesson in Qom and Spanish for students to copy, illustrate specific ideas or words, give homework, and play language games. Blackboards were hung on the wall facing the rows of students' chairs and desks, and usually, the teacher provided the white chalk used to write on them. One of the most important uses of the blackboard was to convey the lessons' key information. In doing so, teachers wrote the date in Qom and the title of the lesson in both languages. As the academic year progressed, they delegated this responsibility to their students. Then, the Qom language teacher wrote a few lines of text, concepts, words, or phrases in Qom, most of the time with their Spanish translation and sometimes with dialectal equivalents. Teachers expected their students to copy this information in their notebooks, following the norms prevalent in elementary or high school classes (i.e., students should use neat handwriting, either cursive or print, use permanent pen instead of pencils, use colors to emphasize or underline, and keep notes in chronological order in a notebook or binder).

The use of the blackboard was sometimes accompanied by recommendations for their future professional role as elementary teachers (e.g., you need good handwriting; you must read with a strong and clear voice, if not, how are the children going to listen to you; don't forget to always put the date; it's important to respect children's different ways of talking). Teachers' writing on the blackboard and students copying it covered stretches of 10 to 25 minutes in each class, in which oral interaction was reduced or off-topic.

Another use for the blackboard was to write down a word, or examples of Qom words, as support to explain their meaning, illustrate a point, ask students for choral reading, or answer a student's question. Students sometimes asked spelling questions and made suggestions or corrections to their writing. In general, teachers were receptive to the suggestions, as they often came from students who were considered more advanced Qom speakers. Sometimes when faced with those requests, teachers wrote the Qom word, sounding its phonemes, and double-checking how they appeared on the blackboard. The blackboard was never used for collective Qom writing, or to produce a unit of text (more than isolated phrases or words) responding to an extra-class purpose (e.g., an announcement, invitation, letter writing). In this way, the use of the blackboard kept Qom writing within the school sphere.

The blackboard was used for a game, a few times, which consisted of two lines of students and the teacher or another student pronouncing a Qom word and the first student of each line running to the blackboard to write it. Their answers were compared and validated by the teacher, or the group of students. The writers went to the back of the line, and another word was uttered. This activity, although short, was very participative and full of laughter. Occasionally, it led to short exchanges about dialectal varieties in the words, and the possibilities for spelling them. Outside of the classroom, when interacting with the research team members, Qom

language teachers often used the blackboard to answer questions or explain issues about the language.

While the teachers invited their students to write on the blackboard for some of their activities, blackboard writing remained a particular practice associated with their role as teachers and experts in Qom writing. For example, Professor Wuyes explained: "In my class, daily you will come up and write on the blackboard, so you start to adapt, ok? This is the reason you are preparing to be teachers, you are going to write on the blackboard, too, in Qom". The blackboard was used for the public display of Qom writing and was one of the most prevalent forms of accessing written Qom. Blackboard writing was also ephemeral and personal, erasable and rewritable, and allowed for flexibility in spelling. In this way, the use of the blackboard had similarities with oral practices, as Qom teachers usually reminded students that their parents or grandparents might have alternative ways of pronouncing or writing certain words or phrases.

This flexibility teachers had when spelling in Qom was not always well received by novice Qom learners, who wished to have correct answers when pronouncing or writing the Qom words and phrases they were beginning to learn. It was also challenged by students who perceived that reproducing one way of spelling over another acknowledged a source of authority (e.g., different teachers or family members). However, teachers were also very skillful at promoting the knowledge of dialectal varieties in their role as Qom experts and language educators, given that more linguistic knowledge and ability are required to recall differences between dialectal varieties, and to choose when and how to use these varieties.

Blackboard writing, as a common practice of modern Western schools, had become a key medium to transmit and produce written Qom, which brought with it the transformation of the Qom language into school knowledge and the socialization of preservice teachers in their future

professional roles. Authentic or social goals for writing were missing in this process. What did happen, is that reading and writing were modeling the uses of written Qom for their future experience as elementary school teachers. When used to transmit written information, blackboard writing was time consuming and reinforced receptive language and passive learning. At the same time, blackboard use signaled a hard-earned achievement, Indigenous languages were now part of schooling and not forbidden or punished as they were barely a generation ago. The challenge became how to leverage this *school teacher literacy practice* to incorporate some of the features, principles, and activities that research is starting to show as beneficial to Indigenous language learning in this context of linguistic retraction. The paradox for Indigenous teachers is that while innovative pedagogies invite them to recuperate family funds of knowledge, real-life uses of writing, project-based learning, and community-centered approaches, their social standing within the colleges and their connection to the school systems appeared to be still tentative and fragile, discouraging novel practices that deviated from the norm. Indigenous teachers' promotion of innovation within the college might come at the expense of jeopardizing a perception of teacher professionalism, however limited or traditional that perception was.

Breathing Life to Qom Lataq

One prevalent, and initially puzzling, biliteracy practice was the round-robin reading of Qom stories, complex texts that were beyond students' Qom knowledge at the moment. The text for collective reading aloud were short stories (two or three pages) found in the booklets published by well-known and respected Qom educators Juan Chico and Orlando Sánchez. The content of the story, or some version of it, could be familiar to the students. Students sustained this reading practice during half-hour periods, without interruption. Usually, at the end of the

reading, the teacher commented or expanded on the meaning of the story and used its themes to share cultural knowledge.

During the reading, teachers alternated between following the written text or focusing on listening, sometimes offering support to read a difficult word. Reading turn-taking usually followed their sitting arrangement, yet teachers signaled the order of readers and sometimes paused the reading to make comments in Spanish. Students in one of the research sites with access to a library delegated a few classmates to ask for copies of the booklet at the beginning of the class and return it at the end. On the other research site, there was a mix of photocopied material, digital copies, or pictures to be read from cell phones.

 Reading was done word by word, seldom whole phrases, and required concentration. Students' voices were not always loud enough for the whole class to hear, in those cases, the teacher approached the reader to hear better. Nevertheless, these stretches of time usually captured the whole class's attention, as no side talk was observed, and the students followed the reading in their copies of the text. When readers finished reading their lines, a sense of accomplishment was perceived by subtle smiles and body relaxation. This led me to conclude that it was a valuable practice for students too.

Sharing cultural knowledge was prefaced by teachers with appreciative comments about the history of Qom communities, their resilience and knowledge of the land, and the strengths communal life had in the past. Teachers suggested students ask their parents or grandparents about the customs of the past. Teachers positioned themselves as bridges to this past and valuable knowledge, including Qom teachings that announced hard times to come for Indigenous communities. These auguries were shared as an assurance that Qom people were prepared to prevail through difficult times, referencing the period of the Conquest, the expansion of the

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Argentinian state, but also present-day conditions. As some of the teachers were also pastors in different evangelical churches, their comments had similarities with sermons or biblical commentary with the purpose of inspiring, teaching, and elevating the audience but also scolding or warning. This cultural knowledge interaction included knowledge about how things were built, or actions coordinated, and was also intertwined with personal interpretations of Qom knowledge or beliefs (e.g., if it was advisable or not to marry outside the Qom community). Commentaries also included a selection of recommendations for ethical conduct that inspired values of respect, hope, perseverance, trust, happiness, serenity, patience, wisdom, perceptiveness, fortitude, and others. However, these comments were offered from an authority position, which limited the discussion about objections to some traditions. Not problematizing certain customs was particularly relevant regarding Qom teachings related to social hierarchies (e.g., men and women, elders and youth) which currently are being challenged by modern social discourses. Teachings related to the taboo menstruating women have to respect and the consequences of transgressions were presented but not reflected upon.

When this read-aloud literacy practice was identified and presented to the teachers in reflective meetings, I had the opportunity to ask them about their intention in reading aloud texts above students' Qom comprehension level. Teachers identified two main goals. The first one was to "breathe life" into Qom, to fill the classroom with the sounds of Qom. This was particularly important as they felt students were sometimes ashamed of their Qom identity and of being heard speaking Qom. The teachers themselves had shared the process of becoming prouder and more open to speaking Qom in public settings. So, this practice instaurated Qom in the public sphere, students as producers of Qom language—in the sense that they were reading—and was embedded in the process of transmitting cultural knowledge and nurturing Qom identity.

Teachers were careful of being supportive and encouraging to students during their reading, as it represented the first steps of students becoming literate Qom individuals.

The second goal was to provide opportunities to automatize decoding in Qom. One classroom exchange between Professor La and his students articulated this belief of the importance of reading aloud to learn Qom:

Excerpt 1. Professor La's classroom observation

Profesor: Es fácil leer, la mejor práctica para aprender el Qom es leyendo.
Estudiante 1: Uno mira acá y es como también, uno va aprendiendo, así como el castellano tiene que ir leyendo, acá lo común es leer, leer, practicar.
Profesor: Por más que no entienda yo siempre . . .
Estudiante 1: Leer, castellano como el Qom, leer, leer, leer.
Profesor: No importa si no entendés el Qom, pero la idea es que vos leas.
Estudiante 1: Claro.
Profesor: Para poder, digamos, facilitar, la imagen de la palabra, porque con que vos leas, vos sabes los signos, manejar los signos y poder deletrear rápido. Por más que no entiendas, pero podés leerlo por lo menos rápido. Entonces vos manejas los signos. Porque si igual no manejas los signos te falta la imagen de la palabra.
Estudiante 1: Claro.
Profesor: Aunque vos no entiendas, pero vos, al estar escrito, vos sabes qué es lo que está, que cómo está escrito, cómo está armada esa palabra a través de los signos y entonces voy a saber cómo pronunciarlo, aunque vos no lo entiendas. Pero es importante leer, leer, leer, leer, yo me acuerdo de mi experiencia, cuando recién digamos interpretaba las lenguas Qom y el castellano y el castellano al Qom, que era muy autodidacta. Aquella época, leía el Qom sin entenderlo, porque había palabras cerradas en las primeras traducciones.

English translation
Professor: *It is easy to read, the best practice to learn Qom is by reading.*
Student 1:   *You look here and it's like that too, you learn, just like in Spanish you have to read, here the common thing is to read, read, practice.*
Professor: *No matter how much I don't understand, I always . . .*
Student 1:   *Read, Spanish like Qom, read, read, read.*
Professor: *It doesn't matter if you don't understand Qom, but the idea is that you read.*
Student 1:   *Of course.*
Professor: *To be able, in a way, to facilitate the image of the word, because if you read, you know the signs, you handle the signs, and you can spell fast. Even if you don't understand, you can at least read it fast. So, you know the signs. Because if you don't know the signs, you lack the image of the word.*
Student 1:   *Of course.*
Professor: *Even if you don't understand, since it is written, you know what it is, how it is written, how that word is put together through the signs, and then you will know how to pronounce it, even if you don't understand it. But it is important to read, read, read, read. I remember my experience when I was just starting to interpret Qom to Spanish and Spanish to Qom, I was an autodidact. At that time, I read Qom without understanding it, because there were closed words in the first translations.*

As the professor and student agreed, reading is important in both languages. For a Qom speaker, reading without understanding is a strategy to build vocabulary, to access "closed words" that have fallen into disuse. In this case, Professor La, whose first language was Qom and learned Spanish as a second language, recommended the strategy for beginners. To read, to know how to spell the words, allows students to link the signs to an "image of the word."

The Qom alphabet requires some retraining in reading a few symbols differently from Spanish, most relevant, the letter ⟨x⟩ which represents a sound used in Qom that is not part of the sounds of Spanish /ɢ/, a guttural /g/, and the letter ⟨'⟩ which is used to represent "the glottic" ("el glótico"), the phoneme /ʔ/ also known as a glottal stop[5]. For this reason, after teaching the Qom alphabet or *acechedario*, reading aloud even when the text is above students' language level is an opportunity to automatize these new grapheme-phoneme relationships. In those cases, as explained by Professor La, understanding is not the priority. In other cases, since reading aloud is accompanied by conversations about the story and other aspects of Qom culture, and as there is an expectation that students have heard or know these stories, access to content is achieved by means outside of the printed text or complemented by orality. In this manner, for teachers, meaningfulness was not lost.

Entering Spaces and Coordinating Action

Student teachers were offered and expected to use greetings, direct instructions, and short phrases in Qom to coordinate action inside the classroom and school. This content was shared on the blackboard or worksheets, for students' memorization. Gradually, teachers used a few of the

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[5] "The glottal stop is not a separate phoneme (or distinctive sound) in English, though it is one of the allophones of the t phoneme in some dialects (as in Cockney or Brooklynese "bo'l" for "bottle"). It functions as a phoneme in numerous other languages, however, such as Arabic and many American Indian languages" (Encyclopaedia Britannica, 2023).

phrases in their classrooms, promoting brief exchanges with students. An example of these phrases (see Figure 3) shows the range of instructions including: come inside, move, go outside, sit down, let's play outside, wash your hands, come inside slowly, be silent when you write, and read what it is written.

PARA APRENDER

FRASES ACCIÓN LENGUA QOM

ACTIVIDAD PARA LEER E INTERPRETAR

Aȳala anpa'aauo: Veni adentro
Qonta´ anquicra'a: A ver córrete
Asoma apa'auec: Anda afuera
Asoma anso'oñe: Anda sentaste
Qolaq sa'ashaq na pa'auec: Vamos a jugar afuera
Aȳo naua arhua'axayel: Lava las manos
Anpa'auo qataq anpottac: Veni adentro y despacio
Qaue'emaqaita ra queraxañi: Silencio cuando escriben
Ataxaȳaxan ye nerec: Leer los que está escrita

Figure 3. Action phrases to learn in Qom.

These phrases are welcomed by students and found useful for future professional life. They are used in the observed classes demonstrating their practical application. These phrases emphasize Qom for class management purposes. However, this pragmatic orientation could be used and expanded to include other important roles teachers would have to fulfill interacting with Qom parents and families, occasional translators for patients in hospitals or defendants or accused parties at courts, and other common situations.

Literacy-Mediated Storytelling

Qom stories are one of the community's treasures. Oral stories contain tales of the origin of the world and humanity, knowledge about the inhabitants of the world, teachings,

admonitions, taboos, advice, and more. Storytelling is one way Indigenous groups theorize about the natural and social worlds and decide how to act. Qom stories are usually told in Qom by the elder members of the family, chosen wisely to be responsive to the audience's concerns, and left open for interpretation by the listener.

A few published collected stories were in circulation, done by Qom scholars and educators for use in schools and teacher training colleges. These materials are booklets of 20 to 30 pages, with a few stories each and some black and white illustrations. Reading these stories, in Spanish or Qom, was a regular activity in the observed classrooms. Based on that regular activity, the biliteracy practice identified relates to invitations to recreate stories in writing, write new stories, and most importantly, facilitate the discussion of the moral of the story or the possible meaning or teachings. Although the content of the story is connected to vernacular literature, the literacy activity would not be considered authentic, in the sense that its purpose and audience were limited to the college classroom.

For example, one morning, Professor Wuyes shared information about Qom's moon-based calendar. In the afternoon of the same day, he introduced a Qom story about the Sun, the Moon, and Darkness or Note'[6]. The bilingual text was presented, and students were invited to read in Spanish, knowing that in the future they could read it in Qom with their students.

Excerpt 2. Professor Wuyes' classroom observation

<blockquote>
Profesor: Los que no están haciendo nada, yo envié un trabajo de Sol Luna Note' [oscuridad]. Sí, el que tiene el celular ¿alguien puede leer la lengua castellana? El que no está tomando [su merienda], mientras tanto escuchan. De paso ustedes van a ir aprendiendo la lectura porque uno le dice: "En un tiempo lejano solo unas mujeres…", una lectura bastante comprensible para los más pequeños el día de mañana cuando trabajen la lengua Qom. Porque hay otro hojita que es lengua Qom, "E'ta uho so'ona'ac aso alo'calaxaye nache na'che'ñe añi na'ala'" [Había una vez
</blockquote>

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[6] Spanish and Qom have gender nouns. In this case, the Sun is feminine in Qom, and masculine in Spanish, and the Moon is masculine in Qom, and feminine in Spanish. Obscurity is feminine in both languages. Therefore, in the Qom story the Sun is a mother, the Moon her son, and Darkness the sun's sister.

una mujer pero que era el sol] ¿ven? dice la lengua Qom "Añi mashe nache lmalec na añi ca'axogoic" ¿E'ete ra lmalec? [Ella le cubre a la luna, ¿como le cubre?] porque la luna no tiene la luz propia.

English translation:
Professor: *Those who are not doing anything, I sent a work of Sun Moon Note' [darkness]. Yes, those with the cell phone, can anyone read the Spanish language? Those who are not [having their snack], in the meantime listen. By the way, you are going to learn the text because one says: "In a distant time only some women...", a quite understandable reading for the little ones tomorrow when you work with the Qom language. Because there is another little page that is in Qom language, "E'ta uho so'ona'ac aso alo'calaxaye nache na'che'ñe añi na'ala'" [Once upon a time there was a woman, but she was the sun] see? The Qom language says "Añi mashe nache lmalec na añi ca'axogoic" E'ete ra lmalec? [She covers the moon, how does she cover it?] because the moon does not have its own light.*

Then, Professor Wuyes told the traditional story to their students, while they had access to the Qom and Spanish written versions. Succinctly, the story is about a son, Moon, who asked permission from his mother, Sun, to travel; she accepted but warned him to be careful and avoid an evil woman, Note', Darkness, Sun's sister. When the Moon failed to return, the Sun confronted Moon's sister and found his son almost dead. Sun rescued her son, brought him back to life, and then instructed him to always walk in the West; that is the reason the full moon always appears in the West. Professor Wuyes, then commented about the current challenges Qom youth face, which are similar to walking in darkness. Knowledge, in contrast, is light, and there is always a mother protecting and advising her children. He said that the students had probably been encouraged by someone to keep studying and to come that day. Then, he proceeded:

Excerpt 3. Professor Wuyes' classroom observation

Profesor: Tienen que tener un objetivo, objetivo claro: Yo voy a superar la lengua qom, voy aprender la lengua qom, voy a sacar la venda de mi cara y quiero ser qom. Me identifico. A eso vamos, y el que es mestizo, papá qom/mamá criolla, o al revés, voy a ser qom. Fíjense que luna también, estaba en la oscuridad, pero ¿quién le salvó? la mamá. Pero para sobrevivir lo tuvieron que mandar al oeste, por eso a la mañana el imagen que hemos hecho aquí [señalando un diagrama hecho por la mañana], un soplo de vida le hicieron.

El conocimiento de ustedes va a ser lo mismo, ya cuarto año, nquictahue'e ahuaỹata [se va ampliando, creciendo lo que sabe]. Tercer año ¡uuuu!, cuarto año ya va a tener conocimiento circular, ¿se entiende? Empieza a brillar, empieza a ser ¡ah yo soy

toba! ahora sí, ¡yo soy qom! [risas] Aỹem qomlashe, aỹem qomlec [yo soy qom, qom soy yo].

Acá estamos, el conocimiento lingüístico como una luna recién, en segundo año ¡ay que lindo voy a estar en ỹa ayala ampa'ahuo [compañero vení], [risas]. Ya en tercero ya ỹa chac e'etec ra ñapaxaguenac [compañero que te parece si estudiamos] un poquito más. Y acá ỹa ñacpiolec qaỹalai qanapaxagueñic [chicos vengan a estudiar] más palabras ¿sí? A eso vamos el relato, ¿vieron que sirve el relato? No es solamente, está escrito solamente el relato, si no, reflexionar, hay que reflexionar. Si soy nervioso, suprimo. No me gusta estudiar, suprimo eso. Voy a estudiar, voy aprender la lengua qom. Si soy rebelde, no voy aprender la lengua qom, entonces que vamos hacer, ¿qué tenemos que hacer?

Alumno: Aprender en Qom

English translation
Professor: *You have to have a goal, a clear goal: I am going to excel in Qom language, I am going to learn the Qom language, I am going to take the blindfold off my face and I want to be Qom. I identify myself. That is what we are going for, and the one who is mestizo, Qom dad/criolla mother, or the other way around, I am going to be Qom. Remember the moon was also in the dark, but who did save him? His mother. But to survive they had to send him to the West, that is the reason for this morning's image we have here [referencing a diagram made that morning], a breath of life was given to him.*

Your knowledge is going to be the same, when in 4th year, nquictahue'e ahuaỹata [it is expanding, what you know is growing]. 3rd year, uuuu!, 4th year you will already have circular knowledge, do you understand? It starts to shine, it starts to be: ah, I am toba! Now yes, I am Qom! [laughter] Aỹem qomlashe, aỹem qomlec [I am Qom, Qom I am].

Here we are now, linguistic knowledge barely like a moon [first quarter moon], in 2nd year ¡ay how nice I am going to be ỹa ayala ampa'ahuo [partner come], [laughs]. In 3rd year, ỹa chac e'etec ra ñapaxaguenac [partner, what do you think if we study] a little bit more. And here ỹa ñacpiolec qaỹalai qanapaxagueñic [guys, come and study] more words, okay? That's what the story is about, did you see that the story is useful? It is not only, the written story, but, to reflect, you have to reflect. If I am nervous, I control it. I don't like to study, I remove that. I am going to study, I am going to learn the Qom language. If I am rebellious, I will not learn the Qom language, so what are we going to do, what do we have to do?

Student: *Learn in Qom*

Professor Wuyes skillfully extended the meaning of the story to apply it to current students' concerns, and through the transmission of cultural knowledge, he fortified Qom identity strongly associated with the knowledge of the language. He used the metaphor of the four phases of the moon to describe how students were going to progress in their linguistic knowledge and their ownership of language learning. He was teaching students to acknowledge stories as more than what is written, foregrounding their critical and reflexive take on the story.

Finally, he included advice to discipline the character to succeed in their studies. In summary, access to the Qom story was provided in Spanish, or Qom and Spanish, but the focus of the biliteracy practice was the discussion about the meaning of the story.

Another form this practice took was by asking students to do research, including conversations with their family members, using the Internet, or finding other books, to share their versions of the Qom story, in Qom if possible, or in Spanish. On two occasions, the Spanish versions were translated to Qom by the teacher and given back to the student. The process was also accompanied by orientations regarding which stories were appropriate to share in public spaces, and which ones were not, which ones could be shared with children and others that should not. In the words of Professor Lhamtes, students had to learn that stories contain "things that you say with a low voice and things you say aloud." In this manner, storytelling, traditionally an oral practice, was now mediated by written text and recreated in the classrooms as channels for cultural knowledge and identity, character education, and the promotion of reflective thinking.

Translating

Translating refers to the practice of expressing some ideas or concepts from one language to another, more often from Spanish to Qom, for public display on bulletin boards for holidays. Additionally, sometimes students asked their teachers how to convey one term or concept in either language. As has been observed (Hecht, 2023), bulletin boards in Indigenous languages have become a reaffirmation of Indigenous language presence in schools. In the colleges observed, the commemoration of historic days, particularly those associated with Indigeneity—September 5, Day of the Indigenous Women; October 11, The Last Day of Freedom—were used as instances to deploy markers of identity, political discourses in favor of Indigenous rights, and the institutions' positive contributions. Sometimes, Indigenous students were asked to greet in

Qom and to read a few lines of text in the Indigenous languages. The translation requests were usually initiated by criollo teachers, who sometimes were frustrated by the different versions offered by teachers. Particularly, one newly hired criollo teacher was baffled by the lack of agreement and had doubts about language competency regarding simple translation tasks.

Indigenous language teachers also had different working theories about translation work. One teacher more connected to translation work in the religious and judicial spheres explained:

Excerpt 4. Professor La's storytelling interview

> La interpretación es muy importante, porque a veces la traducción -yo soy traductor intérprete- no se puede traducir bien como está, tienes que interpretarle y darle una aclaración, un desarrollo, cosa que se entienda bien el Qom [persona], a qué se está refiriendo el contenido, para que se entienda. A veces podés leer el párrafo, el contenido del párrafo y ahí resumís en palabras sencillas y que sean comprensibles, la interpretación, no hace falta. Digamos que vos hagas una redacción de interpretación. Porque a veces con pocas palabritas, ya estás dando a entender, conceptualmente, desde las lenguas Qom y es simplemente para que aquel que entiende el Qom entienda.

> *English translation:*
> *Interpretation is very important, because sometimes when translating -I am a translator and interpreter- one cannot translate exactly what it says, you have to interpret it and provide a clarification, a development, so that the Qom person understands it well, what the content is referring to, so that it is understood. Sometimes, you can read the paragraph, the content of the paragraph and there you summarize in simple and understandable words, then it is not necessary to interpret. Let's say that you write an interpretation. Sometimes with just a few words, you are already making understandable, conceptually, from the Qom languages and it is simply so that those who understand the Qom, comprehend it.*

In his intervention, Professor La is using the word "interpreter" with two meanings: (a) interpreter as an oral translator, the reason he is an interpreter and translator, and (b) interpreter as someone who explains the meaning of the text. La expressed a common translation approach seen in biblical texts in northern Argentina, where faced with the difficulties of finding the exact equivalent words, translator agreed to focus on the gist of the text and find the closer correlation in concepts in Qom (Almiron & Padawer, 2021). Another perspective present in these efforts, was expressed by Professor Nala:

Excerpt 5. Professor Nala's storytelling interview

> Trabajo mucho con la lengua y me enojo cuando me dicen "profe puede traducir tal cosa" y le digo en nuestra lengua no se traduce. Porque si yo digo "nala", digo sol en castellano y uno es femenino y otro masculino. Lo mismo digo "luna" y digo "ca'axogoic" [luna] y una es femenino y otro es masculino. No se traduce, es imposible traducirlo.
>
> *English translation:*
> *I work a lot with the language and I get upset when they tell me "teacher can you translate such and such" and I tell them our language does not translate. Because if I say "nala", I say sun in Spanish, and one is feminine and the other masculine. The same thing I say "luna" and I say "ca'axogoic" [moon] and one is feminine, and the other is masculine. It does not translate, it is impossible to translate it.*

The second perspective stresses the incommensurability of language, and as representation of different cultural worlds, the impossibility of finding suitable correspondence between words. This approach by Qom speakers was useful to warn students against trying to impose Western concepts to Indigenous culture. The recent opening of tertiary degrees for translation assistants, a demand from the judicial and health systems to better serve Indigenous populations, is a possible creative space to theorize about translation between Spanish and Indigenous languages. A few of the Qom language teachers worked in the education degrees and the translation degree, creating a go between of knowledge and practice.

In this sense, this biliteracy practice condensed tensions about cultural difference and cultural mutual understanding and challenged Qom language to convey decontextualized knowledge. However, there was not a reciprocal process of expanding the Spanish language with concepts and words from Qom, or this possibility was rather alluded to but not actualized in the observed classes.

Becoming Qom Experts

A final biliteracy practice was the exposition of the Qom language's uniqueness, distinctiveness, and complexity. During classes, Qom language teachers displayed a mastery of two languages and cultures. Teachers were keen to nurture a sense of wonder in students about their linguistic heritage. They had to combat a prevalent language ideology conceptualizing

Indigenous languages as dialects, less-than-literate languages, and half-language. This ideology extended to Indigenous speakers who are thought of as less cultivated, deficient in their proficiency of Spanish, and less intelligent (Bonnin & Unamuno, 2021). With their Qom students, they must undo years of corrosive linguistic racism.

One of the manners Indigenous language teachers have found to combat societal prejudice was by awakening awe and appreciation for Qom. Qom's standing as a complex language was defended and its uniqueness was exalted. Through the presentation of the Qom alphabet, the introduction of concepts and vocabulary, and the composition of phrases, a deep respect for the Qom language was instilled. A sense of how difficult it was for adults to learn Qom also infused these expositions. Additionally, the range of Qom teachers' biliteracy expertise was gradually more visible, as they shared ample knowledge of each language, Qom and Spanish, of Qom dialectal varieties, and made comparisons in terms of how concepts and words were culturally understood.

Teachers were enthusiastic yet did not position themselves as exclusive knowledge-holders. As one teacher shared, he enjoyed tremendously when there were more advanced Qom speakers among his students, since the conversation could go deeper, and they could think together about other examples and questions. However, this enthusiastic discourse sometimes led to a heightened sense of the difficulty of learning Qom. Additionally, elements of their exposition were connected to the ways Qom has been studied by linguists, as this was one important source of information about how Qom has been systematized and acquired a written system. For example, in the following exchange, in one of the first classes of the year, a Qom teacher introduced the acechedario, and explained:

Excerpt 6. Professor Wuyes' classroom observation

Profesor: "Ye", el glótico o apostrofe, y este se llama virgulilla que está arriba con la "ye".

Alumno:	¿Cómo?
Profesor:	Virgulilla, tienen nombre. Entonces fíjense que, por ejemplo, a ver, vamos a escribir una palabra para que ustedes pueden entender lo que es el glótico. La misma escritura, pero acá me cambia totalmente el significado. Lean.
Alumnos/as:	Pela'
Profesor:	¿Como se dice? Pela o pela'. Para nuestra lengua, ¿qué es pela' [zapatilla]?
Alumna:	¿Zapatilla?
Profesor:	Aja' [sí], zapatilla, vieron, que aquí al tener un glótico al final, que tenemos la misma escritura… dice pela' [zapatilla] y me cambia totalmente el significado teniendo un glótico. Entonces, pela [garrapata] es un insecto, una garrapata, y acá abajo zapatilla, sí, al tener solamente el glótico me cambio totalmente el significado, se entiende. A ver, otro, vamos a...
Alumna:	Pero ¿eso sucede con algunas palabras nada más, o con todas las palabras al ponerles el glótico ese?
Profesor:	Con todas las palabras, sí.

English translation

Professor:	*"Ye", the glottal or apostrophe, and this is called tilde[7] which is above with the "ye".*
Student:	*What?*
Professor:	*Tilde, it has a name. So, notice that, for example, let's see, let's write a word so that you can understand what the glottal is. The same spelling, but here it completely changes meaning. Read it.*
Students:	*Pela'.*
Professor:	*How do you say it? Pela or pela'. In our language, what is pela' [shoes]?*
Student:	*Shoes?*
Professor:	*Aja' [yes], shoes, you see, that here having a glottal at the end, we have the same spelling, it says pela' [shoes] and it completely changes the meaning having a glottal. So, pela [tick] is an insect, a tick, and here below [pointing to the blackboard] shoes, yes, having only the glottal completely changes the meaning, you understand. Let's see, another one, let's...*
Student:	*But that happens with some words only, or with all words when you put the glottal on them?*
Teacher:	*With all the words, yes.*

The explanation of how in Qom one sound, particularly the glottal phoneme, could

change the meaning of a word appeared in classes observed with all teachers; some examples

were even repeated. As the quoted excerpt showed, sometimes this led to an overgeneralization

of the possibilities of having new Qom words by altering just one sound in a word. I found that

one source of this exercise was grammar studies of Qom. These documents usually started with a

description of Qom's phonological system, based on the strategy of phonological opposition, or

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[7] In Qom you need to write the letter ⟨ỹ⟩ The diacritic mark on top is called "virgulilla" in Spanish and tilde in English. Tilde in Spanish refers to other diacritic mark (´).

minimal pairs. Figure 4 illustrates this technique. Although a common strategy for descriptive studies of new languages, particularly those without written systems, these examples used in isolation lead to incorrect generalizations about the nature of the language. It is important to acknowledge how linguistic studies of Qom have influenced discourses about the language. Moreover, the promotion of interdisciplinary bridges between this field, so present in Indigenous contexts, and the educational field could prove extremely valuable to find robust language teaching approaches.

- *Fonema /m/* :

Oposición m/n:

mala?	'cama'		**n**ala?	'sol'
ha**m**a	'dulce'		ha**n**a	'ella'
(h)ayi**m**	'yo'		(y)ayi**n**	'lo abandona (3sg)'

Oposición m/p:

myo	'rana'		**p**yo(q)	'perro'
dachi**m**i	'paloma'		dachi**p**i	'explota (3sg)'
?a**m**	'vos'		?a**p**	'labio'

Figure 4. Minimal pairs for phoneme /m/ in Qom.

All symbols from the International Phonetic Alphabet (González, 2015, p. 25).

Indigenous Language Teachers' Biliterate Trajectories

To deepen the comprehension of Indigenous teachers who have generated these biliteracy practices, relevant themes from the analysis of storytelling interviews are presented. These themes deal with Indigenous teachers' life stories, the dynamic of adversity and resilience, Indigenous teachers' agency to become teachers, their personal experiences in acquiring literacy practices, and their perspective on the future of the language (analysis procedures were described in Chapter 3). The connection between current biliteracy practices and how they are shaped by these past experiences is further developed in Chapter 6.

The Dynamic of Adversity and Resilience

Indigenous teachers narrated moving personal stories intertwined with the effects of harsh economic and social exclusion Indigenous communities in Argentina face. The description of their life events reverberated with the impact of political, social, and economic events that affected the well-being of Indigenous communities in specific and targeted ways. Indigenous identity and belonging to an Indigenous community were mediated by these traumatic events. Witnessing these stories, they contained explanations about strategic or forced decisions regarding place of residence, educational choices, involvement in political processes, religious activism, or family configurations (e.g., choice of partner, language spoken at home). Although "resilience" might have explained how these individuals' responses to adversity seemed to connect to constructive actions, it was still not clear the process through which this resilience was developed or nurtured.

In terms of adversity, teachers' experiences were grouped into two, which followed generational lines, the first one included life-threatening situations, and the second one systematic discrimination at the social and institutional level. The older generation (i.e., over 50 years old, born in the 1950s and 1960s) had witnessed violent episodes, such the killing of Indigenous individuals, being unjustly thrown out of their homes, hunger, and beatings, among others. The younger generation (i.e., in their 30s and 40s, born in the mid-1970s) lived their childhood years closer to Argentina's democratic transition period (1983) and witnessed political reform and the advancement of Indigenous peoples' political rights. However, they shared episodes of overt and covert discrimination. Teacher Lapel, for example, explained how elementary school was a hostile place for her, first, because teachers taught exclusively in Spanish and didn't speak Qom and, secondly, due to criollo peers who mocked and excluded

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Qom students. Particularly telling was an after-school fight, disguised as a game called "Indians versus criollos" in which Qom boys were coerced into participating.

Indigenous Teachers' Agency

In terms of responses to adversity, as mentioned above, this group of teachers had found creative and constructive ways to face obstacles in life, but also to cultivate a disposition that was open to the potential of positive relations with criollos, other Indigenous communities, and even the state and its agencies. The potential for trust and hope had remained. Initially, the actions of strong will, strategic planning, discipline, and carefully considered decisions regarding their education and careers were not immediately noticeable. Teachers framed their stories pointing to outside factors, such as help, opportunities, and accidental strokes of luck. While this probably also had a role in their trajectories, further analysis indicated teachers decided about their future; they even waited years to advance in their education and were active constructors of their fate. Personal narratives were framed to curve individual protagonism, yet analysis showed the different points where they were instrumental in choosing one path over others. Teachers' agency included several strategies: political engagement, active participation in a religious community, use of arts, choice of partner/family, and building relationships with other Indigenous leaders.

Experiences With Literacy

The group of teachers could be classified into two: those whose first language was and remained Qom and those—usually younger—who spoke mainly Qom until they entered elementary school and then Spanish became dominant. For the first group, Spanish was the language they learned later in life, and they had a preference to communicate in Qom. Even so, most of them became literate in Spanish. For the second group, Qom or Wichí remained dormant for many years and was recuperated in their teacher education program.

All teachers shared an important experience in learning to read Qom or Wichí using the translated Bible. Some attentively listened to their elders reading aloud the Bible, following the text with their eyes. Others were actively alphabetized by their parents or grandparents using religious texts. Finally, others mentioned how the Bible is useful to remember the "ancient" words or to keep expanding their vocabulary in the Indigenous language.

Teachers made references to learning Spanish or learning Qom, but there were few statements about being bilingual and no mention of bilingualism as a strength. There were some comparisons between sounds (phonemes) in both languages, and the nature of the alphabet, but less about other aspects of the language or how they mutually influence each other, either from an individual perspective or in terms of social practices. One exception was references to linguistic loans, Spanish words adapted to Wichí or Qom.

Perspectives on the Future of Indigenous Languages

Indigenous language teachers were asked to share their perspectives about the future of the Qom language. Their orientations to the future were nuanced, with a mix of hope, concern, and commitment. Teachers tended to express their wish or hope for the maintenance of the Indigenous language into the future, in terms of hearing the beauty of the language, using the language as it gives joy to the heart, and keeping the language of parents and grandparents alive.

In particular, the interviewees who have managed, through their studies and stable jobs, to both provide for their families and promote the Qom and Wichí culture could be considered the fulfillment of the dreams and hopes of previous generations. However, the work of a teacher trainer in an Indigenous language also entailed the difficulties associated with the status of a minoritized language. Some of these ideas were expressed in the perspectives shared by professors Khates, Pumjwa, and Lhamtes:

Excerpt 7. Professor Khates storytelling interview

Todos tenemos conocimiento de que ya es así, que nosotros estamos perdiendo nuestra lengua. En alguna parte en los jóvenes, en los niños, y, pero nosotros mismos. ¿Qué hacemos, nuestra familia, nuestra casa? ¿Será que nosotros todavía mantenemos cuando hablamos? Y decía, ¿yo también? Incluso me incluyo porque yo en algunas veces dejó de hablar en mi idioma y hablo castellano frente a mi familia.

English translation:
We are all aware that it is already so, that we are losing our language. The young people, the children, but also ourselves. What do we do, with our family, in our house? Do we still maintain it when we speak? And I was thinking, what about me? I include myself because sometimes I have stopped speaking in my language, and I speak Spanish in front of my family.

Excerpt 8. Professor Pumjwa storytelling interview

Yo pienso que ahí la oralidad siempre va a estar, pero lo que nos va a costar es la pronunciación. La perspectiva que tengo es que se va a mantener por un tiempo. Pero la escritura, tenemos que trabajar muchísimo con ellos, con lo chicos que vienen para que no se pierda eso, para que se mantenga la tradición de antes. Habría que trabajar muchísimo sobre eso, razonar muchísimo porque casi la mayoría [hablantes] estamos muriendo todos.

English translation:
I think that orality will always be there, but what will be harder is the pronunciation. I hold the perspective that it will be maintained for a while. But writing, we have to work a lot with the children who are coming so that this is not lost, so that the tradition of the past is maintained. We would have to work a lot on that, to reason a lot because most of us [speakers] are all dying.

Excerpt 9. Professor Lhamtes storytelling interview

Tendríamos que trabajar bien profundamente eso [el futuro de la lengua]. Yo me esfuerzo mucho para enseñar que la educación no es la única puerta, que tenemos como medio para llegar a muchas cosas. En mi está el deseo de escribir y hacer música.

English translation:
We would have to work deeply on that [the future of the language]. I try very hard to teach that education is not the only door, that we have as a means to reach many things. I have the desire to write and make music.

However, other interventions were mixed with less hopeful comments, such as how younger generations were preferring to communicate in Spanish or how collective activities such as church gatherings were turning to Spanish. Some teachers projected that Qom or Wichí would be lost. These future orientations recognized the concerns and fears of losing the language and with it the cultural knowledge and a way of being Wichí and Qom. As one teacher explained: "But when I start to speak in my language, the words I hear are more tender in my language. So, it's like that part, like there is a connection. I mean, I don't know. It's a strange feeling." The

learning of Indigenous languages was connected to the intimacy of family spaces and the spiritual life of the individual and the community, referring to the action of prayers. In this sense, spirituality and Indigenous identity were connected in the discourse, as Professor Chot stated, "Our knowledge that all this is not only material but also that it has a share of spirituality I also claim it . . . because that is our way of being, our feeling".

When expressing a hopeful future for Indigenous languages, teachers highlighted the need for community work to keep teaching the language. In this sense, formal education was not the only perceived avenue, as Arts (i.e., music, dance, and theater), religious community activities, and the family were seen as spaces and/or actors who should be working for language revitalization. There was some hope around how technology might be leveraged to help keep the language, such as the use of YouTube. Teachers also referred to the possibility of using new technologies and the importance of the written dimension of Indigenous languages to build these imagined futures. As Professor Chot explained, "Writing is a path we are still opening", and stressing the ownership needed in the language revitalization project, "we need to work on the language, but we need to do it ourselves. It should not be an outsider telling us how it should be, how it must be. It has to start with us and our consensus."

Summary

Based on classroom video and storytelling interviews to identify biliteracy events, actors, and text, this chapter described six biliteracy practices used in the Qom language courses' classes and Indigenous teachers' trajectories to become language educators. The identified biliteracy practices included, first, *school teacher literacy* through active use of the classroom's blackboard teachers interacted with students in Qom and Spanish. The use of the blackboard was advantageous as it made it possible to rewrite the text as needed, it was the main input of written Qom, and was a symbol of teachers' professional status. Second, *breathing life to Qom lataq* was

observed in students reading aloud stories that have cultural significance, even if the texts were above their Qom language proficiency. The key goals of this practice were to promote ownership of the language, pride for Indigenous identity and heritage, and automatize decoding and fluency in reading skills. Third, *entering spaces and coordinating action*, showed how Qom words, greetings and phrases were valuable for class management.

Fourth, *literacy-mediated storytelling* expanded oral practice based on existing traditional stories and/or cocreating new ones, students learned to use storytelling, as well as relevant cultural knowledge and values. Fifth, *translating*, to participate in school events and reaffirm Indigenous presence in school life. Sixth, and finally, becoming *Qom experts* was based on the belief that undoing prevalent racism towards Indigenous languages needed understanding the genius of the Qom language. The explicit teaching of Qom's written system was a key aspect of this practice. Overall, the purpose of biliteracy practices was to prepare the individual to operate in the school setting and therefore reproduce the logic of Western schooling. However, within those spaces, teachers prioritized the way each practice nurtured, promoted, and maintained a sense of Indigenous identity.

To better understand biliterate actors promoting these biliteracy practices, Indigenous language teachers' trajectories were presented in four main themes. The first theme was the dynamic of adversity and resilience, older teachers had personally witnessed violent episodes while the younger generation have witnessed more progressive political spaces. In both cases, overt and covert racism remained a constant experience throughout their lives; however, so was their capability to transform those hurtful experiences in nurturing learning spaces for Indigenous students. The second theme was Indigenous teachers' agency facing adversity, advancing in their

education, or finding constructive outlets to fight for Indigenous rights through political engagement, the arts, religious affiliation, or family configuration.

The third theme included experiences with literacy, transitioning from an Indigenous mother tongue to Spanish in elementary school or transitioning from dominant-Spanish to the Indigenous language during their training as teachers. In all cases, early literacy was done in Spanish, while the Bible played a key role as a repository of written Indigenous language. The fourth theme involved mixed perspectives on the future of Indigenous languages; there was hope and commitment to maintaining, but also an acknowledgment of linguistic retraction. The Indigenous language was seen as vital for culture preservation, and part of the life of the spirit, and writing was highlighted as an important tool in the efforts of language maintenance. To connect teaching biliteracy with learning biliteracy, in the following chapter, Indigenous students' development of biliteracy competency during one school year is described and analyzed.

Chapter 5 : Findings – Becoming Biliterates

The previous chapter explored how Qom language teachers employed, created, and developed biliteracy practices in their classrooms, the meanings they assigned to them, and how their life and educational trajectories influenced those practices. But how did biliteracy competency develop in their students?

Much of the research on biliteracy practices identifies and describes such practices, the interactions around them, and their potential benefits in developing identity, voice, bilingualism, and literacy. Given its grounding in literacy as a social practice, less attention has been paid to literacy as a cognitive ability. This chapter does just that. I seek to answer: *What is Indigenous preservice teachers' initial level of biliteracy competency and how does it change in the course of one academic year?* First, I present Indigenous preservice teachers process of entering their teacher preparation program and the placement procedures in place. Then, I present the Spanish literacy assessment tool results followed by information about Qom literacy abilities. I also share observations about preservice students' growth and change by language teachers and themselves.

How Did Indigenous Preservice Teachers Start the Year?

As the hot months of summer transition to slightly less torrid temperatures, and fall starts in the southern hemisphere, incoming students to the degrees of Bilingual Intercultural Primary Teachers (Profesorado Intercultural Bilingüe para la Educación Primaria) and Bilingual Intercultural Early Childhood Education (Profesorado Intercultural Bilingüe para la Educación Inicial) organize themselves to attend classes at the two teacher training colleges participating in this study. The cohort of young adults had probably been considering their studies for some time, arranging schedules, making accommodations in their family lives, and securing some financial support to further their education. Enrollment requirements include having a high school diploma and completing the necessary paperwork. For some students, this decision demanded them to

move from their homes to a more central residence where a boarding school has a capacity of 60 residents in two rooms, one for each genre, to stay from Mondays through Fridays. For students attending the urban teacher training college, the class schedule—from 6 to 11 pm on weekdays— demands access to safe modes of transportation and other resources to study.

Most of the students identify as Indigenous —mostly Qom and some Wichí or Moqoit— although in the urban college some criollos have also started to enroll in these degrees as an available option to further their studies and access a teaching position at a public school. There was a variety in their sociolinguistic status, for example, in one Year 1 cohort at the rural college 52% considered themselves fluent in Qom ("hablantes"), 42% informed not having any knowledge of Qom language, 5% stated they "understand it but do not speak" ("entiendo pero no hablo") and 5% were bilingual in another Indigenous language (Wichí). In the case of the urban center, Year 1 cohort informed 10% considered themselves fluent in Qom ("hablantes"), 80% informed not having any knowledge of Qom language, 10% stated they "understand it but do not speak" ("entiendo pero no hablo"). These results coincide with previous research signaling Qom's retraction even in rural settings (Romero, 2020a, 2020b). The diagnostic of their linguistic competency in the Indigenous language was an important aspect of affiliating themselves with the rural college and their nascent identity as future Indigenous teachers.

Language Placement Procedures

Teacher training colleges have different approaches to Indigenous language diagnosis. The urban institution had smaller cohorts, between 18 to 25 enrolled students with a 50% drop-out rate in the first 2 years. Students self-reported their level of Indigenous language competency, in general, most of them identified as Qom or having Qom heritage yet not Qom speakers. A few reported knowledge of some words and expressions, and each year one or two Qom speakers were part of the cohort. Due to having the minimum number of students per

course, and being assigned only one teacher, they could not subgroup students by language level, all students advance in the same cohort.

On its part, the rural institution had a larger number of enrolled students, between 60 to 80 with a dropout rate of 30%. The college offered training in three Indigenous languages—Qom, Moqoit, and Wichí—and had an ampler pool of Indigenous language teachers. Through experience, they had developed a system for language placement supporting their diverse population. During the 1-week propaedeutic course, students received orientation about the degree, administrative procedures, and an introduction to Qom culture and language. Students were also grouped by ethnicity, as they would have different Indigenous language teachers. Wichí and Moqoit tended to be very small groups of 3 to 8 students.

Qom students were asked to self-assess, gently prompted to speak some Qom, and were asked to complete an assessment (presented later in this chapter). Usually, a small number of students' answers either (a) did not reflect their linguistic competence as teachers have been able to gather in the first days, or (b) might be considered in the limit between levels of competence. For this small group of cases, Qom teachers had a short conversation with each student and decided what level they should attend. Although administratively all were in the same course, with the placement test results, teachers coordinated themselves to have several groups simultaneously: Pre-Level for students starting with no knowledge of Qom at all, Level 1 for students with working knowledge of Qom knowledge, and two other Level 1 for Wichí and Moqoit speakers.

Spanish language competency was not assessed, nor other entry-level abilities. Therefore, there was not any support offered to students who had specific needs or difficulties at any of the

teacher training colleges. In the next section, attention is turned to Indigenous preservice teachers' biliteracy development during 1 academic year.

How Did Indigenous Preservice Teachers' Biliteracy Competency Change in a Year?

I approach biliteracy competency with an understanding of being complex yet one competency. However, due to the absence of standardized measures to assess biliteracy, or Qom literacy, I decided to approximate biliteracy competency by employing a Spanish literacy measure and the information gathered by Qom language teachers in the diagnostic phase. These different measures helped understand where students were and how much they advanced in a year. The target group for this analysis was a group of 9 students from the 1st year of bilingual elementary teacher degree at the rural teacher training college. Students from both research sites participated in the assessment, but the rural site provided a larger number of test takers who attended at the beginning and end of their year.

Table 6.
Self-reported sociolinguistic diagnostic

Languages / Question	(Only) Spanish	(Only) Qom	Learning Qom	Spanish & Qom	Other	No response
Languages spoken	4	-	3	2	-	-
Early literacy language	8	-	1	-	-	
Mother L1	3	1		4		1
Father L1	3	2		3		1
Desired language to learn*			5		German/1 English/4 Portuguese/2 Wichi/1	1
Family language	7			1		1
Preferred language for learning	7	1		1		

Note. *n*=9. *Five students mentioned more than one language that they desire to learn.

Table 6 shows students' demographics. This group of students had many monolingual Spanish speakers, only two were bilingual Qom/Spanish, and had learned to read and write predominantly in Spanish (only one response mentions some learning of written Qom). Among their parents, a minority were Qom monolingual, almost half were bilingual, and the rest were monolingual Spanish. Their family language was also Spanish as was their preferred language for learning.

Spanish Literacy

According to assessment results, Indigenous preservice teachers had a low starting point in terms of reading comprehension abilities, particularly in relation to academic texts. There were multiple factors influencing this outcome, but the focus in terms of the DBR study was to understand students' strengths and weaknesses, and to capture if they advanced in a year.

This assessment instrument was completed with students in October 2022 ($n = 16$) and in June 2023 ($n = 19$), with an overlap of 9 students. For this group, the average age was 22.9 years old, minimum 18 and maximum 33 years old. On average, preservice teachers graduated high school in 2018 at 18 years old and enrolled in the teacher training college 4 years later in 2022. While the global pandemic affected enrollment during 2020 and 2021, it was not uncommon for Indigenous students to have to wait between the end of high school and the beginning of higher education studies. Most students were women, yet only 2 were part of the group who attended both test-taking days.

The researchers who developed the instrument assigned 40 minutes to complete the assessment. On my part, I assigned 60 minutes. On average, students on the first occasion needed 69 minutes to turn in their assessment and 52 minutes on the second one. I present the result of this reading comprehension test in its three sections: prior knowledge, reading comprehension skills, and metacomprehension abilities.

For a total of 10 points, students achieved an average of 4.71 (min = 2.32; max = 6.49) in the first take, and 5.41 (min = 4.16; max = 6.66) in the second take (see Table 8). In general, progress was minimal when analyzed quantitatively, yet some students were progressing in their ability to identify the macrostructure of the text, connect different parts of the text to provide the definition of a term, and literal comprehension at the phrase level.

Prior Knowledge

Students were able to provide few responses showing prior knowledge, as 54.62% ($n =$ 59), almost half of the responses—adding 'no response' and 'incomplete'—, were left blank. Incorrect answers were connected to the use of the main authors reviewed in the text (Piaget, Vygotsky, and Matura) as possible responses (see Figure 5). Possibly, one of the difficulties in this exercise was students' expectation to use the same text to answer the questions, as they overwhelmingly did on the following comprehension items.

Nevertheless, notably, when students wrote down responses, among the important figures in Education and History, they mentioned several times Juan Chico and Orlando Sánchez, two highly esteemed Qom intellectuals who have recently passed away (see Table 7).
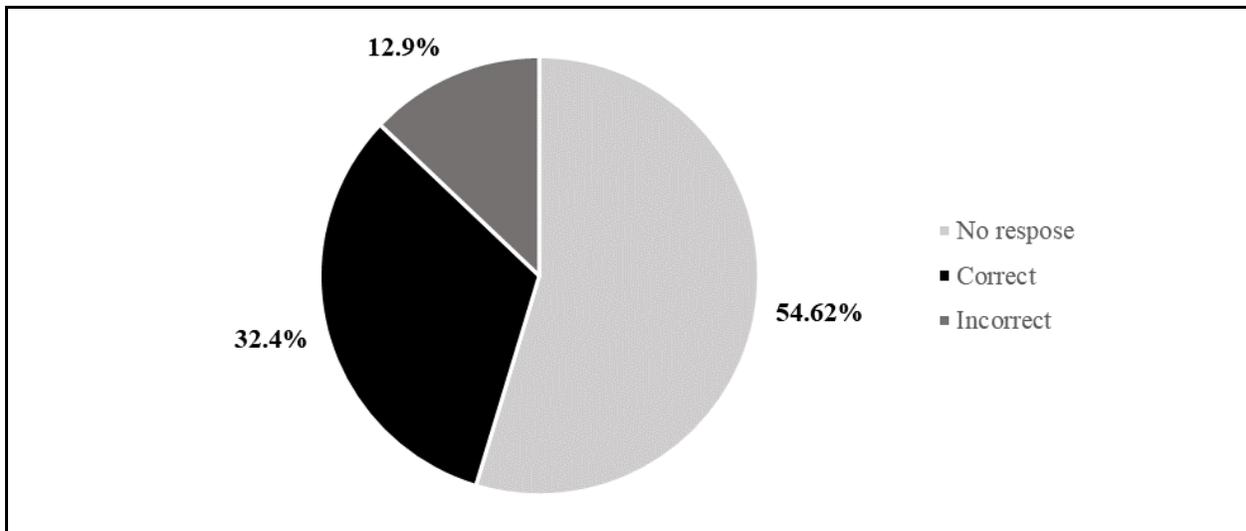
Figure 5. Prior knowledge responses

Table 7.

Responses to "Name Two Important Figures in Each of the Following Areas:"

Responses	Education	Philosophy	History	Subtotal
No response	14	12	8	34
Incomplete (1 figure only)	8	7	10	25
Correct	12	13	10	35
content of responses	Jean Piaget (5) Ausubel Elena Achilli* J. O. Comenio* Alicia Cormilloni* Vygotsky (2) Orlando Sanchez (3) Maturana	Socrates Aristoteles (4) Friedrich Nietzsche Arthur Schopenhauer Platon (2) Confucio* Maturana (3) Darwin	Jesucristo Nikola Tesla Miguel de Cervantes Orlando Sanchez (2) Juan Chico (2) Charles Darwin Albert Einstein Charles Dickens	
Incorrect	2	4	8	14
content of responses	Unrelated text (2)	Osubel** Piaget Unrelated text (2)	Vygotsky (5) Piaget Unrelated text (2)	
Total responses	36	36	36	108

Note. Responses by 9 students on two test-taking dates, each providing the name of 6 important figures (n=108). In parentheses, the number of times the name is repeated.
*More than two names in the same response, not included in total.
**Responses are transcribed verbatim.

Reading Comprehension Abilities

A common feature of students' responses was that they selected a segment of the text that was close to the terms or expressions contained in the question and copied it as a response. However, those extracts did not convey complete meaning, sometimes the phrases stopped mid-sentence, and the writer failed to make connections and inferences or summarize or restate the information presented in the text. This type of practice is common in incipient readers of academic texts (Arnoux et al., 2006b, p. 161).

Table 8.
Summary of results - reading comprehension sections

Cohort 1 T1 & T2 Abilities	2022		2023		Full points
	N/A	Average	N/A	Average	
Prior knowledge	4	0.20	1	0.44	1
Literal comprehension of paragraph	-	0.44	-	0	1
Macrostructure	-	0	-	0.22	1
Connect and infer	-	0.11	-	0.15	1
Literal comprehension (phrase)	-	0.67	-	1	1
Literal comprehension (T/F)	-	0.73	-	0.66	1
Evaluation of text difficulty	-	1	-	1	1
	1	0.83	1	0.83	1
	2	0.78	1	0.78	1
Formulation of comprehension questions	8	0.06	8	0.06	1
Total		4.82		5.14	10

Note. The average for this cohort (*n* = 9) is calculated by counting 'incorrect' and 'no responses' as 0.

Metacomprehension Abilities

In terms of metacomprehension abilities, notwithstanding the less-than-satisfactory results, only one student evaluated the text as *very difficult* (see Figure 6). On the first test-taking day, 37.5% (*n* = 3) of students found the text *normal* in difficulty, and on the second test-taking day, a majority considered it in that same category 62.5% (*n* = 6). This challenge to assess the difficulty of a text indicated low metacomprehensive abilities. This misjudgment, or "illusion of knowledge" (Ehrlich as cited in Arnoux et al., 2007, p. 85), blocked students from deciding to employ additional strategies to access the text.

Finally, students overwhelmingly did not formulate questions based on the text to support reading comprehension. However, Indigenous preservice students used this space to dialogue with the researchers (who administered the assessment instruments). I organized their comments and questions into three categories: pedagogical demands, relational demands, and challenges to the task.
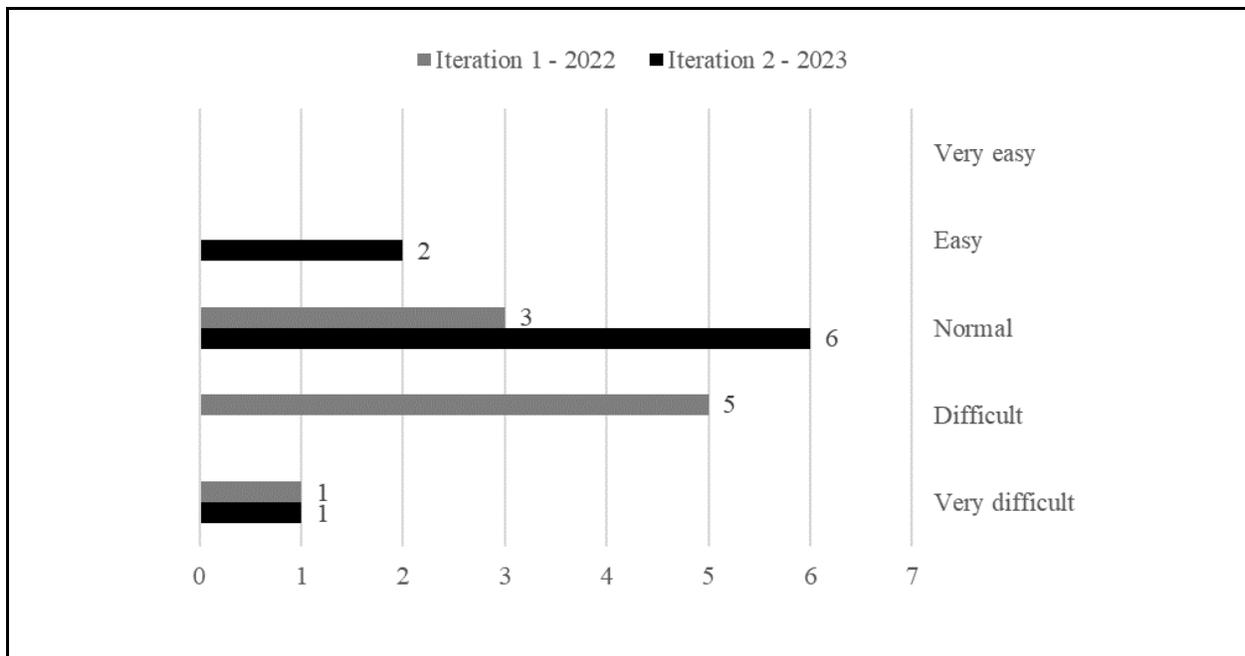
Figure 6. Evaluation of text difficulty by the students

Pedagogical demands referred to requests to the researcher to explain the text beforehand, identify its main ideas, and provide background information. Additionally, students asked for support to understand difficult vocabulary and suggested reading aloud the text for the whole class and having a plenary session afterward to check comprehension. Relational demands referred to students' orientations to relationships, for example, extending their needs and suggestions to include their classmates, (e.g., "maybe some of my classmates did not understand either"). Several students suggested having a discussion, among students, or between the student and researcher, to understand the text better and together. One student used this section to request that teachers address the need to build better relationships among the students. Finally, five comments expressed challenges to the task (e.g., time was not sufficient, questions were not clearly formulated, instructions needed further clarification), and one comment highlighted an observation about the numbering of paragraphs (e.g., "Why did you not number the paragraphs correctly?").

Overall, results showed Indigenous preservice teachers as incipient readers and writers of academic Spanish texts, with strategies of "copy and paste" to resolve assessment tasks, and a clear voice with a dialogic and relational orientation towards their learning.

Qom Literacy

According to the results obtained by Qom language teachers in their diagnostic assessment, half of students in the new cohort were placed on a Pre-Level as they were considered "not speakers" of Qom. The placement test was a written assessment, which presupposed Qom speakers to show their language competency in writing, including translation from Qom to Spanish and from Spanish to Qom. The exercise consisted of two columns, the first one with common everyday phrases (e.g., look for your pen, watch the dog) to be translated from Qom to Spanish and from Spanish to Qom, and the second one with words, also to be translated (see Figure 7). All content was localized knowledge and contextualized language.

We attended one class when two teachers were present reviewing the Qom diagnostic and calling individually several students from whom they wanted more information to confirm their language placement. Teachers, after calling their names, talked to them in Qom. Students engaged in different ways, some started a dialogue in Qom, another laughed remaining mostly silently but showed understanding by giving a few responses or doing as instructed by the teachers, and others communicated in Spanish, even though they were able to write in Qom. One clarification involved their declared ethnicity. Both teachers interacted with the students and sometimes commented on dialectal varieties. Wuyes explained:

Excerpt 10. Professor Wuyes and Lapel, classroom observation

> Docente: Estamos entrevistando a la alumna porque escribió algo, para que vaya como a nivel 1, entiende. Entonces, escribió algo [señalando a la hoja] y acá está hablando en qom. Quiere decir que viene con un conocimiento bastante amplio en la lengua qom, por eso la entrevista.

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English translation
Teacher: We are interviewing the student because she wrote something, to see if she goes to Level 1, do you understand? So, she wrote something [pointing to the sheet] and here she is speaking Qom. This means that she comes with ample knowledge of the Qom language, which is the reason for the interview.
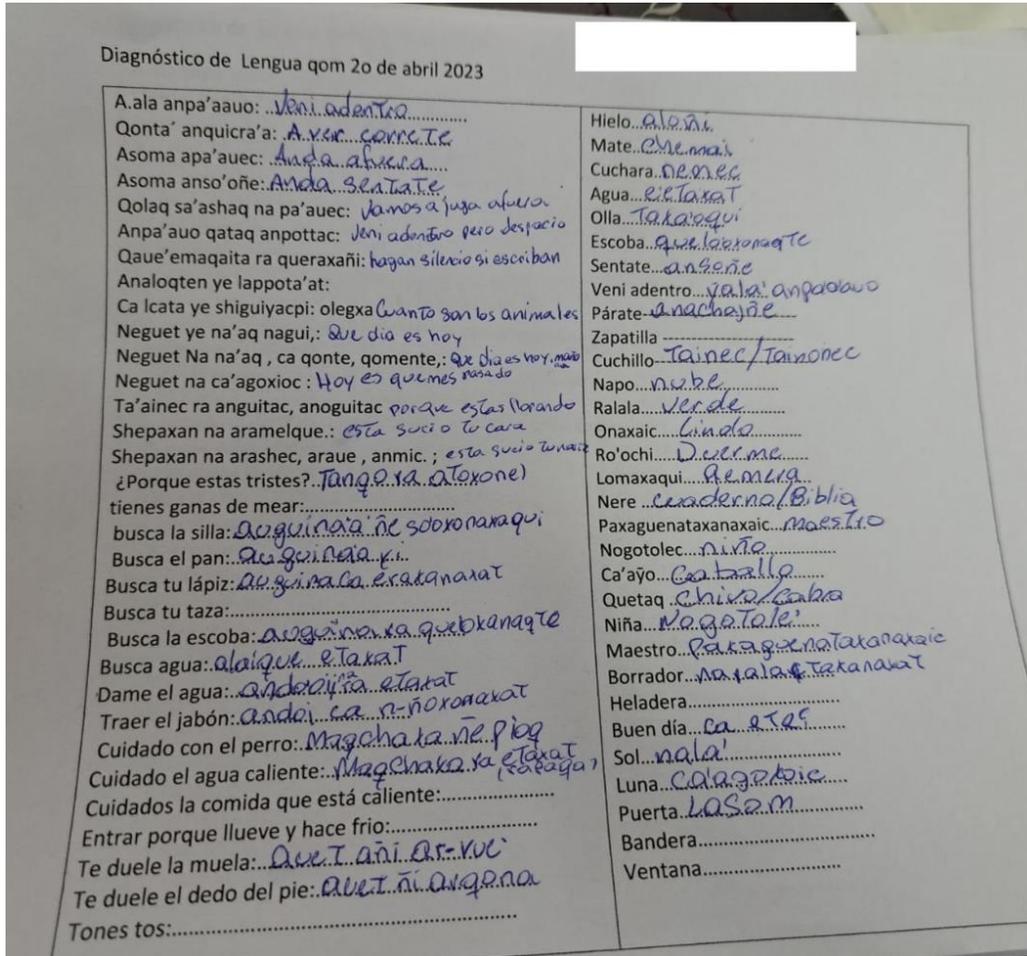
Figure 7. Qom language diagnostic exercise

However, the placement decision also included other considerations. Teachers were open to students' requests to be on Pre-Level, because they considered themselves not knowledgeable enough, they did not know how to pronounce Qom, or had a preference for a teacher, either for pedagogical reasons—one teacher was well known and his teaching approach appreciated while the other one was newer and people were still getting to know him—or linguistic reasons—one shared dialectal varieties between students and teachers.

Through the interactions with the assessment tool, their classmates, and the teachers, each Indigenous preservice teacher had to identify their linguistic competence in Qom, ethnic belonging, family of origin, and place of residence (which sometimes indicated possible belonging to a dialectal variety).

How Did the Year End? A Qualitative Assessment of Progress

End-of-year interviews with Qom language teachers and students provided additional insight into their perceptions of language and literacy growth. Teachers' comments were mixed. On one hand, they mentioned that during the first year, students had an "awakening" of their Qom identity and pride in their heritage which became the basis for speaking Qom, especially in front of criollos, to reach the state of not being afraid or ashamed of speaking Qom. On the other hand, they saw that learning Qom was hard for students and that their progress in terms of communicating in Qom was limited. They also noticed that even though students had a great desire to learn, not all of them asked questions, approached teachers, did their homework, or studied on their own. Teachers also thought, as indicated by Wuyes, that some students were "only interested in the degree and graduating".

This limited perspective on students' interest to learn was also contrasted with the presence, in the discourse, of an ideal or anecdotical criollo student who learned Qom. Six teachers mentioned examples of non-Indigenous individuals learning to read Qom faster than their Qom classmates. Asked about it, one teacher, Nala, explained:

Excerpt 11. Professor Nala storytelling interview

> Investigador: ¿Por qué crees que las rocshe[8] aprenden a leer más rápido?
> Nala: Porque yo veo que tienen una mentalidad más abierta, como que se sienten más libres de poder equivocarse. El indígena se equivoca una sola vez y no te va a volver a leer, del temor a equivocarse no lo hacen.

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[8] Rocshe or doqshi: Qom term for white people (blancos) o criollos, ethnically non-Indigenous Argentinians.

Researcher: Why do you think rocshe learn to read faster?
Nala: I think they have a more open mentality, they feel freer to make mistakes. The Indigenous person makes a mistake once and will not read again, because of the fear of making mistakes they will not do it.

In general, teachers assigned the main responsibility for the advancement of their literacy and language abilities to students' predispositions (i.e., their commitment to study or their willingness to make mistakes).

Moreover, reading in Qom had become the first milestone in students' language learning. As one teacher, Imalaq, explained:

Excerpt 12. Professor Imalaq storytelling interview

Entonces comenzar con esas chicas de cero, usar esos cuatrimestres para trabajar con ellos el tema de lo que sea la pronunciación, la fonética, el sonido de cada consonante, de cómo se dice una palabra, el tema de la función del glótico… es la base de la lengua.

English translation
So, starting with these girls from zero, using these four quarters to work with them on pronunciation, phonetics, the sound of each consonant, how to say a word, how the glottic functions… is the basis of the language.

In conclusion, teachers' assessment of students' progress was more positive when they considered what might constitute the teacher training college milestones, principally to read in Qom, and less positive when thinking about communicating or writing in Qom.

Students' voices

Students self-assessment of their 1st year of study started with a deep appreciation of their own efforts and sacrifices to continue their studies. Academic achievement, in this sense, was seen through the lens of life and community achievements. One student in Wuyes' course group interview illustrated this, saying:

Excerpt 13. Professor Wuyes' students, group interview, iteration 1

En este año me puse la responsabilidad en comenzar y terminar. Y realmente en este grupo que conocí acá me sentí como más adaptado, más socializado. Se pueden compartir experiencias, vivencias y cosas que, en otras instituciones, yo siempre fui en la etnia criolla como se dicen, no se hacen estos tipos de eventos, actos así de la diversidad cultural de acá. Me siento también muy contento porque yo sinceramente he perdido mi lengua nativa y

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con este proceso de educación estoy aprendiendo constantemente muchas palabras en la lengua, pero me falta armar oraciones y esas cosas. Pero se que con el tiempo voy a dominar la lengua, cosas que son de mi descendencia, de parte de la herencia de mi madre.

English translation
This year I assumed the responsibility of starting and finishing. And really this group that I met here I felt more adapted, more socialized. We can share experiences, anecdotes, and other things that in other institutions, I was always with 'criollos' as they say, they do not do these types of events, acts of cultural diversity like here. I also feel very happy because I honestly have lost my native language and with this education process, I am constantly learning many words in the language, but I still need to put sentences together and those things. But I know that with time I will master the language, things that are part of my lineage, part of my mother's heritage.

Students were overwhelmingly positive about their learning progress. They read and wrote in Qom more than ever before in their lives. They learned new words and sentences in Qom, and stories and cultural practices. When explaining how they would put their new knowledge to practice, students mentioned two main uses: (a) to employ words and greetings to interact with the children in their future classrooms, and (b) to translate and write in Qom words and sentences displayed in a bulletin board to commemorate the school's historical dates or holidays. In the family sphere, they also expected to share greetings and words. On their part, criollo students added that they did not need to learn Qom, as they would have a teacher aid who would speak Qom (Auxiliary Aboriginal Teacher, ADA for its acronym in Spanish). When considering these goals, all groups concluded that what they learned in the 1st year seemed sufficient.

Lastly, during the group interview students were asked to compare speaking and writing in both languages, Spanish and Qom. In response, students in Wuyes' focus group described features related to phonetics and their writing systems, saying:

Excerpt 14. Professor Wuyes' students, group interview iteration 2

"In Spanish sounds are softer, everything sounds the same; in Qom sounds are stronger", "in Qom they use more consonants", "it is confusing, in Spanish you need four letters and in Qom you need eight letters to say the same thing", "your muscles get tired speaking in Qom", "in Qom you write something and you make a mistake with just one letter and then it says another unrelated thing".

In these interventions, students learning of Qom were circumscribed to an incipient understanding of the language, mainly some phonological features, issues of decoding and coding, and an association of meaning to the letters of a word.

Agentive Indigenous Learner

Literacy in Qom was particularly intertwined with Qom cultural knowledge. Students valued Qom intellectuals and would benefit from receiving more knowledge about historical figures within the Qom community, and Indigenous communities in general, as part of their general education and identity development. This should also be considered in Spanish texts too. In both cases, students expected to access academic text through orality and their teachers' orientation. This expectation could be leveraged and scaffolded to develop their knowledge of reading comprehension strategies and metacomprehension abilities.

As literacy learning in both languages was predominantly mediated in Spanish, there was a need for some shared thinking and planning between Spanish and Qom language teachers to find synergies and clear instructional strategies to promote reflection and learning on the uses and purposes of learning both languages and their contributions as readers and writers of Qom and Spanish. Students' relational orientation was another strength to be considered in the design of reading comprehension approaches.

Students participated in many activities during the academic year (e.g., self-organization within the boarding school to cook breakfast, lunch, and dinner, fundraising money for extracurricular activities, participating in marches to demand public transportation or scholarships) which were examples of the concerns of Indigenous young adults and their commitment to carve different paths for themselves. This agentive Indigenous learner could be the reader and writer who inspires strategies and content in the classrooms and partners with Qom language teachers for the broader language revitalization goals. I also maintain that

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biliteracy's social and cognitive dimensions need to be addressed by the teachers and, when worked in conjunction its cognitive dimension, could be expected to have durable results.

Summary

This chapter showed how Indigenous preservice teachers demonstrated perseverance and resourcefulness in their decision to enroll in a teacher training college. Their biliteracy competency is only assessed by one of the institutions, for language placement procedures. In general, Spanish and Qom, and literacy in each language, were conceptualized by teachers and students as independent of each other. This study's assessment of Spanish literacy competency showed students' low level of reading comprehension, particularly a weak metacomprehension ability to assess lack of understanding. In terms of literacy as a cognitive ability, growth was minimal when comparing correct answers and a reduction of the time to complete the items. However, students were able to use the space created by the assessment to promote a dialogue with the researcher, including their suggestions to improve their educational experience. This was an important expression of voice and agency regarding their learning.

Qom literacy was assessed by knowledge of words and phrases, which reflected local knowledge and contextualized language. Teachers' and students' overwhelmingly positive assessment of growth during their 1st year was connected to pragmatic goals they set for this degree: if preservice teachers were able to use greetings, have short interactions with children, read in Qom, know (i.e., use, read, write) basic vocabulary, and translate some phrases for public display in the schools' bulletin board they would be considered successful bilingual intercultural learners. Indeed, most students were able to achieve these goals during their studies.

Nevertheless, goals of language recuperation or revitalization, communication with elders, and writing in Qom remained implicit in the discourses. Students were willing to invest

more time in their learning and teachers were willing to develop strategies and materials to heighten Qom learners' communicative competence and ability to write original texts in Qom.

To deepen the understanding of the elements affecting biliteracy development, in the next chapter I focus on how previous experiences learning Qom and Spanish influence current biliteracy practices, limiting or empowering language and literacy learning.

Chapter 6 : Findings – Literacy Experiences Constraining and Enabling Learning

In Chapter 4, I presented six biliteracy practices employed by Indigenous language teachers in their process of creating and supporting their Indigenous preservice students. These biliteracy practices were specific combinations of nurturing Indigenous identity while socializing students in a Western-based schooling system. In Chapter 5, I shared findings related to an approximation of Indigenous students' development of biliteracy competency, through the use of one instrument to gather information about reading comprehension in Spanish, diagnostic information of Qom knowledge, and students' qualitative self-assessment at the end of the year. Although teachers and students were appreciative of language growth during that year, there was an acknowledgment that biliteracy competency progress was limited. Positive appreciations were based on the goals considered for assessing learning, namely, that preservice students were able to code/decode in Qom, acquired a basic vocabulary, and managed greetings and class management short instructions. In this Chapter, I used classroom observations, interviews, and the Qom language workshop to focus on the perceived relationships between teaching and learning biliteracy, to answer my third research question: *How do teacher educators and Indigenous preservice teachers perceive the relationship between their enactment of biliteracy teaching strategies and the development of biliteracy competencies in Indigenous preservice teachers?*

As previously stated, biliteracy practices were only observed in Indigenous language classes, so I selected sources of data from those language courses and teachers. I identified that the relationships between teaching and learning could act as constraining or enabling teachers' orientations toward students' learning. For example, a belief that language learning is mainly the product of socialization—mirroring the life experiences of Indigenous language teachers learning

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Qom and Spanish—might limit the expectations about how much can be achieved through systematic training. On the other hand, the value Indigenous teachers placed in a warm emotional learning environment, acted as a strong motivator to create a learning experience radically different from what Indigenous language teachers themselves had experienced, enabling the development of literacy teaching approaches infused with practices that strengthened Indigenous identity.

I found that Indigenous language teachers' teaching was modeled after alphabetization of adult Qom speakers or Spanish early literacy approaches. The first situation was connected to the introduction of the alphabet in this community—as well as many others Indigenous communities in the Americas—by religious groups with evangelization purposes. Qom language teachers were used to the type of teaching materials and approaches developed for adult alphabetization. The second situation was connected to their schooling and their training as elementary school teachers. Both approaches did not correspond with the current sociolinguistic panorama, preservice teachers who were adult learners, predominantly using Spanish, particularly in literacy activities, and who did not speak Qom. In this context, I found three relationships between teaching and learning constraining Qom biliteracy teaching, and another three were enabling new ways of thinking about biliteracy.

Literacy Experiences Constraining Learning
Systematized Versus Self-Taught

In the storytelling interviews, all but one of the 13 Indigenous language teachers shared being monolingual Qom or Wichí during their childhood. One teacher explained he had picked up some Spanish from criollo neighbors, but the majority of teachers learned Spanish at school, with almost no help or support, facing discrimination and sometimes punishment for not understanding the language of the classroom. Six of them informed, they had learned Spanish

when reaching 8 or 9 years old. One teacher felt she was able to interact in Spanish at 14 years old, and the other six assessed that by adulthood, between 18 to 25 years old, they were able to use Spanish to communicate, work, and learn. Except for one teacher who shared that her teacher paired Indigenous children with a criollo partner, to facilitate Spanish learning, all the teachers learned by immersion (i.e., listening to the teacher and peers, and copying their actions), and unsupported by the school or their teachers.

Several teachers shared personal strategies to learn Spanish (e.g., asking questions to their relatives who spoke better Spanish, reading football magazines, forcing themselves to talk to colleagues even when they had to face some mocking, reading out loud in nature in Spanish to then think how to express the ideas in Qom). All were successful in achieving biliteracy and continued their studies to become teachers. While teacher training provided additional and valuable experiences, they tended to refer to these formative years when explaining some of their approach to teaching. Teacher Chot explained "When we were children, we never thought about writing our language" and Teacher Nala "in the past our teaching was not systematic."

Teachers tended to privilege students' commitment to learning, using what was presented in class, but also their initiative to find new materials, opportunities to practice, and strategies to learn the language. Whereas this orientation is very useful with adult learners, it may preclude the development of additional and structured opportunities to practice Qom in the classroom or school-generated projects to connect with speakers of the language outside of the school. Although there are other factors to consider, such as time and resources, teachers tended to emphasize individual strategies to access language through immersion.

Influence of Spanish Literacy Learning

When observing Qom language teachers in action, one of the initiatory practices was to teach the Qom alphabet. Qom language teachers were both excited and brief in their introduction

of the Qom alphabet. In several instances, they started this practice by explaining that the Qom alphabet is very similar to the Spanish alphabet, with only a few exceptions. Usually, teachers wrote the alphabet on the blackboard by heart, and then explained how letters are pronounced and which letters are different from Spanish. Sometimes, they had a printed page or a digital document with the alphabet to circulate among the students (see Table 9 with examples of the Qom alphabets).

Teachers explained that some letters were missing, such as ⟨b⟩ or ⟨f⟩, as those sounds were not used in Qom. Teachers continued with examples of the main differences compared to the Spanish alphabet, the most common differences were three. First, the letter ⟨x⟩ represents a sound used in Qom which is not part of the sounds of Spanish /ɢ/ a guttural /g/. Second, the symbol ⟨'⟩ is used to represent "the glottic" ("el glótico"), the phoneme /ʔ/ or glottal stop. And third, the use of the letter ⟨ỹ⟩ called /i/ with a diacritic mark ("i con virgulilla").

Table 9.
Qom Alphabets

Reference	Graphemes
Buckwalter (2001) & Netoqqui (2006) 28 letters	a, c, ch, d, e, g, hu, i, j, l, ll, m, n, ñ, o, p, q, qu, r, s, sh, t, u, v, x, y, ỹ, '
Messineo (2005) 29 letters	a, c, ch, d, e, g, gu, hu, i, j, l, ll, m, n, ñ, o, p, q, qu, r, s, sh, t, u, v, x, y, ỹ, '
Sánchez (Sánchez, 2009, 2019) 32 letters	a, 'a, c, ch, d, e, 'e, g, hu, i, 'i, j, l, ll, m, n, ñ, o, 'o, p, q, qu, r, s, sh, t, u, v, x, y, ÿ, '

Note. While these different alphabets share most of the graphemes, the main variations include:
- To represent each of the four vowels /a/, /e/, /i/, /o/, once by their graphemes ⟨a⟩ or twice including the presentation of the vowel with the glottic phoneme /ʔ/ ⟨'a⟩
- The representation of phoneme /j/ as ⟨ỹ⟩ or ⟨ÿ⟩
- Another alphabet uses the grapheme ⟨ĝ⟩ instead of ⟨x⟩ for sound /ɢ/ (Nacach et al., 2015). In other alphabets double vowels /aa/, /ee/ are represented ⟨a:⟩, ⟨e:⟩ (Native Languages of the Americas, 2023). However, more recent linguistic studies concluded that double vowels seldom appear, and therefore these signs would not be necessary. (Based on Buckwalter & Buckwalter, 2001; Messineo & Dell'Arciprete, 2005; Sánchez, 2009, 2019).

There were two challenges observed: the first challenge was the circulation of various alphabets and the second one was the letter-centric approach to teaching them. The decision about which alphabet to use could be understood as declarations of allegiance, either to a religious community, to the territory, the training institution, or to the Qom language teacher one had, but was also used as part of the positioning of Qom language teachers as language experts and autonomous writers. For example, this teacher incorporated different alphabets in her teaching, recognizing diversity within the same teaching institution, and had a clear rationale for her own choice.

Excerpt 15. Professor Lapel storytelling interview

> Docente: Por ejemplo, el acechedario no hay un solo alfabeto definido, con el que se maneje la escritura de la lengua qom. Yo les muestro, yo les doy, estos son los que se manejan en estos lugares. Pero yo les doy siempre el más sencillo.
> Investigadora: ¿Cuál es el más sencillo?
> Docente: El que es más casi parecido al abecedario, tiene 27 consonantes creo. Yo sé que el profe trabaja con otro acechedario, incluye la ⟨a⟩ con glótico, la ⟨a⟩ sin glótico, la doble ⟨a⟩ con glótico, y así. Siempre estamos analizando esas cuestiones durante el proceso, el transcurso de las clases, porque van apareciendo palabras y empezamos a analizar.

> *English translation:*
> *Teacher: For instance, there is not only one alphabet [acechedario] to write in Qom. I show them, I give them which ones are used in different places. But I always give them the simplest one.*
> *Researcher: ¿Which one is the simplest?*
> *Teacher: The one most similar to the [Spanish] alphabet, I believe it has 27 consonants. I know the other teacher works with a different alphabet [acechedario] which includes the ⟨a⟩ with glottic, the ⟨a⟩ without glottic, double ⟨a⟩ with glottic, etc. We are always analyzing these issues during the process, during classes, as words appear and we start to analyze.*

Even though, from the perspective of first-year students, these differences in acechedarios created some challenges, as their learning achievements in the written language were easily questioned by the possibility of "getting it wrong" according to the different perspectives held by Qom language teachers, Indigenous language teachers considered important to reference this diversity in alphabets and found ways to navigate this issue in their teaching. Another dimension of the problem was the perception of impositions regarding the written norm, as one teacher illustrated:

Excerpt 16. Professor Khey storytelling interview

> El tema de la ⟨x⟩ ¿sí? Se definió el uso de la ⟨x⟩ por más que no tengamos ⟨x⟩ en nuestra lengua materna, para representar el sonido de la /g/ glotal. Una compañera lingüista cuando escribe la /g/ glotal… la escribe con una ⟨x⟩ mayúscula, subrayada, por más que esté escribiendo en cursiva, ella escribe con mayúscula. Mientras se entienda eso, está bien. Pero eso también es una decisión de manera unilateral porque es como ella, está asociado a la lengua, es una cientista lingüística, no cuestiono eso. Pero sí, nosotros, ¿cuál sería nuestra postura? ¿Cuál sería nuestra decisión? Yo te voy a decir usando la /g/ glotal con ⟨x⟩, porque fue una decisión de aquellos que hicieron la traducción de la Biblia.

> *English translation:*
> *The subject of the ⟨x⟩ ¿ok? There was a definition to use ⟨x⟩, even though we don't have ⟨x⟩ in our mother tongue…, to represent the sound /g/ glottal. A fellow linguist when she writes /g/ glottal she uses a capital ⟨g⟩ underlined, even when writing in cursive, she writes it in capital letters. While this is understood, everything is all right. But it's also unilateral because she is associated with the language, she is a scientific linguist, I don't challenge that. But I do ask us, ¿what is our opinion? ¿What would be our decision? I am going to say to use the ⟨x⟩ for the glottal /g/ because it was a decision from those who translated the Bible.*

Several times teachers reminisced about meetings held to discuss between Qom speakers and other interested actors about these topics. Teachers also suggested the need to replicate this type of gathering. However, their interest was more in the dialogic process and the exchange of language expertise, and less on resolution, results, or standardization. The call for more meetings could also be a strategy to preserve Indigenous peoples' agency in this issue, as there is no previous experience where issues of the Qom language were not subject to outside interference and different types of pressures.

In the process of introducing the alphabet, what I observed as a source of difficulty was the tendency to teach the acechedario in a letter-centric way, that is, focusing on how letters sound. Alphabets or writing systems are more adequately conceptualized as systems of signs to represent the language, for alphabetic writing systems, the unit of representation is the phoneme. When individuals become literate in those writing systems, they acquire phonemic awareness, a metalinguistic ability to segment the spoken word into phonemes, phonemes that are then represented by their corresponding sign (i.e., grapheme or letter). While both processes are important to develop phonemic awareness (i.e., analyzing spoken words to find their phonemes

and analyzing written words to figure out how to read them) the observed classes tended to replicate how alphabets were taught in elementary schools, without paying attention to phonemic awareness nor a broader perspective on the phoneme-grapheme correspondence systems of Spanish and Qom, and without a comparative analysis of them. What was promising was one teacher alluding to the need to develop phonemic awareness. Imalaq shared:

Excerpt 17. Professor Imalaq storytelling interview

> Yo aprendí la importancia de afinar el oído, ¿cómo vos entendés una palabra? Porque cuando vos afinas el oído, entonces de esa forma al tener los sonidos, cada una de las consonantes, más las vocales y la posición del glótico en una palabra. Entonces de esa forma vos podés armar, podés ir a la escritura. Pero vos tenés que saber primero eso, incorporar eso. Para mí es la base de lo que sea la lengua Qom.

> *English translation:*
> *I learned the importance of developing my listening ability, how do you understand a word? because when you tune your ear, then in that way you access the sounds, each of the consonants, plus the vowels and the position of the glottal in a word. So that way you can put together, you can go to writing. But you have to know how, first this, incorporate it. For me, it is the basis of whatever [has to do with] the Qom language.*

This type of lesson from experience could be a topic of reflection for a team of teachers to develop approaches to teaching Qom. Other types of experiences, when not reflected upon, tended to be replicated, regardless of its pedagogical value, or the existence of newer and more integrated pedagogical approaches. Teachers stated examples of how their previous experience influenced their present teaching, for example, one teacher indicated, "Teaching was very generative in those times, because all alphabets had images" and this is what he does now in Qom, or to teach "you have to separate in syllables so the students would understand," a possible reference to syllabic early literacy approaches.

Another dimension of the problem is that Spanish literacy teaching is based on a more transparent phoneme-grapheme correspondence system, compared to other dominant languages such as English or French. Qom, based on the Latin alphabet used in Spanish also shared these simpler relationships between phonemes and graphemes. However, the simplicity of both

systems is deceptive when thinking about biliteracy learning, as competent biliterate individuals are managing two overlapping phonological and written systems, which by proximity require additional precision and clarity. A summary of Spanish and Qom phonological systems and alphabets is presented in Table 10. For a more detailed description see Appendix D.2.

Table 10.
Overlapping of Spanish-Qom Phonological Systems and Alphabets

System	Spanish	Overlapping	Qom
	23 phonemes		24 phonemes
Phonological system	/b/, /f/, /j/, /x/, /r/, /ɾ/, /u/	/p/, /t/, /d/, /k/, /g/, /s/, /t͡ʃ/ /m/, /n/, /ɲ/, /l/, /ʎ/, /a/, /e/, /i/, /o/	/q/, /ɢ/, /ʔ/, /ʃ/, /ʒ/, /h/, /w/, /j/
	29 letters		28 letters
Alphabet	b, f, h, k, w, x, z	c, ch, d, g, j, l, ll, m, n, ñ, p, q, r, s, t, u, v, y a, e, i, o	hu, qu, sh, x, ỹ, '

Note. All symbols are from the International Phonetic Alphabet.
The first and second columns correspond to the Spanish phonological system in the variety spoken in Chaco, Argentina, and the Spanish alphabet (including digraphs ⟨ch⟩ and ⟨ll⟩). The second and third columns correspond to the Qom phonological system in the varieties spoken in Chaco, Argentina, and the Qom acechedario used by Buckwalter (2001). The column in the middle, in gray, highlights the shared phonemes and graphemes. (Buckwalter & Buckwalter, 2001; Cayre Baito, 2017; González, 2015; Hachén, 2007; Hualde & Colina, 2014)

I argue that monolingual learning of Spanish, and then Qom, made the complexity of this learning process as an object of teaching less visible. Indigenous language teachers are the biliterate individuals par excellence, and they had mastered this learning. Yet, the influence of monolingual teaching is constraining opportunities to reflect on this and find teaching strategies to help students advance faster and firmer in their learning.

Qom is Difficult to Learn

Interviews and classroom observations contained instances in which teachers declared Qom was a difficult language to learn, particularly for adults. This belief was held for various reasons: (a) adults would always have difficulty pronouncing Qom sounds (phonemes not found

in Spanish); (b) the presence of dialectal varieties, in oral and written form, made it more

challenging; (c) the meaning of the words in Qom; and (d) Qom had long words.

Again, I found the influence of past experiences in the difficulty of imagining how to

transcend at least the first three reasons. As a minoritized language, in everyday life Qom

individuals very seldom find non-Qom people who speak the language. The issue of difficulty

pronouncing certain phonemes is a marker of being foreign or an outsider. However, this

challenge does not make communication impossible, and a few teachers indicated that

understanding is still possible.

On the second reason, dialectal varieties are a feature of Indigenous languages, and any

teaching approach should include this reality (as is explored in Chapter 7). Currently, any

proposal to teach Qom could not be based on standardization of Qom varieties if it wants to be

used by Indigenous language teachers. A few observed classes showed teachers promoting

dialectal intelligibility at the level of words and expression, and this approach could be extended

to sustained dialogue and analysis of a variety of written samples.

Regarding the third reason, Teacher Wuyes exemplified:

Excerpt 18. Teacher Wuyes interview

> La lengua Qom es muy difícil porque hay algunas palabras polisémicas, polisémicas porque tienen
> varios significados entonces es también costoso. Por ejemplo, ana lachi es una palabra donde se
> puede entender que se "voló", se puede entender que "granizó", puede entender una "cebolla".
> Entonces tienes tres con esa misma palabra, pero vos enseñas de acuerdo al tiempo.
>
> *English translation*
> *The Qom language is very difficult because there are some polysemic words, polysemic because*
> *they have several meanings so it is also hard. For example, ana lachi is a word where you can*
> *understand that it "flew", you can understand that it "hailed", you can understand an "onion".*
> *So, you have three with that same word, but you teach according to the time [you have].*

The idea that Qom is difficult because it has polysemic words was one way to confront

monolingual ideology—which categorizes Indigenous languages as being lesser forms of

language, dialects, or less—by presenting Qom's complexity, particularly when conveying

meaning in Spanish. However, there is still a need to transcend the expectation of total correspondence between words of both languages. Another articulation of this difficulty is related to cultural differences, and as voiced by Teacher Iss, explained the resistance to the bilingualism project.

Excerpt 19. Teacher Iss storytelling interview

> Yo creo en un principio que el bilingüismo es muy peligroso, porque puede ser un arma para una nueva colonización. Puede ser una herramienta para trasladar símbolos. La educación bilingüe tiene que salir desde las comunidades indígenas y no para las comunidades indígenas, porque muchas veces se cree que el bilingüismo es para indígenas y ese es el problema. Las palabras están llenas de significados culturales, por ejemplo, cuando hablamos de justicia ¿Qué es justicia? Uno tiene que entender que es la justicia para el mundo blanco para entender la justicia en el mundo indígena, es un tema muy delicado y muy complejo. Hasta hace pocos años se creía que la justicia era la policía y el bilingüismo muchas veces cae en esa suerte. Por eso el bilingüismo tiene que ser un espacio de intercambios y de reflexiones, porque si no vamos a caer en ese campo de meros traductores.

> *English translation*
> *To start with, I believe that bilingualism is very dangerous because it can be a weapon for a new colonization. It can be a tool to transfer symbols. Bilingual education has to come <u>from</u> the indigenous communities and not <u>for</u> the indigenous communities because many times it is believed that bilingualism is for indigenous people and that is the problem. Words are full of cultural meanings, for example, when we talk about justice, what is justice? One has to understand what justice is for the white world to understand justice in the indigenous world, it is a very delicate and complex issue. Until a few years ago it was believed that justice was the police, and bilingualism often falls into that trap. That is why bilingualism has to be a space for exchanges and reflections, otherwise, we are going to become mere translators.*

Making a language accessible through documentation and teaching materials opens it up to all interested in learning the language, including, as Teacher Iss observed, those institutions and individuals embarked on colonial practices toward Indigenous communities. Again, making Qom difficult to learn is also a way of resisting colonialism. Nevertheless, in the context of teacher training colleges, there was invested interest in helping students learn the language and become promoters of Indigenous languages. This study's goal was to understand how this learning was happening, identify strengths, and areas of reflection to continue improving the experience of Indigenous language learners.

The fourth reason for Qom's difficulty in learning was conveyed by Teacher Wuyes:

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Excerpt 20. Teacher Wuyes storytelling interview

> Docente: La lengua qom no sé si es difícil, pero se lee como, como eso que yo les decía, miren.
> [Escribe en la a pizarra ⟨paxaguenataxanaxaic⟩].
> Investigadora: A ver espérese, espérese.
> Docente: Por ejemplo, la palabra que uno no está adaptado a la lectura es costoso pero si leé la
> "pe" con la "a", "pa" lo único que me cambia el sonido es este qué es como una doble "gue"
> [señalando a la ⟨x⟩]. Entonces leo /pa-ɢa-ge-na-ta-ɢa-na-ɢa-ic/
> Investigadora: ¿Qué significa esa palabra?
> Docente: Maestro, docente, profesor.
>
> *English translation:*
> *Teacher: I don't know if it's difficult but how you read it, it's how I was talking to you about. Look. [Writes*
> *on the blackboard ⟨paxaguenataxanaxaic⟩].*
> *Researcher: Wait, wait.*
> *Teacher: For example, the word is hard to read when you are not adapted to it, but you read "p" with "a",*
> *"pa", the only thing that changes is double "g" [pointing to the ⟨x⟩]. Then I read: /pa-ɢa-ge-na-ta-ɢa-na-*
> *ɢa-ic/*
> *Researcher: What does it mean?*
> *Teacher: Educator, teacher, professor.*

In other instances, teachers explained that Qom words are long. This characteristic of

long words is related to the linguistic structure of the language. Qom is an agglutinative language

with a polysynthetic tendency (Carpio, 2012; Censabella, 1997; Cúneo, 2016). This means that

each word is composed of a root (lexeme) and several parts that construct meaning (morphemes).

On the other hand, Spanish is a fusional or inflected language, which tends to have only one

inflectional morpheme with additional meaning. In Qom one word contains a lot of information

and a whole phrase could be used to translate its meaning. For example, the word

"saxanaxanachelñi'iñi" is analyzed in Table 11:

Table 11.
Analysis of Qom Word Construction

Qom	saxanaxa	n	-achel	ñi'iñi
Word classes	morpheme adverb of time	morpheme third person participant medio	lexeme or root	morpheme demonstrative pronoun
Spanish	Todavía no	(se)	bañar	él (ese)
English	Still no	himself	bath	he (that one)

Adapted from Messineo & Dell'Arciprete (2005)

To be translated: "he still hasn't bathed himself" or in Spanish "todavía no se baño él".

The agglutinative nature of Qom, and other distinctive features of its structure of the language, demand teaching methodologies that promote the necessary habits to use a different set of grammatical rules. Many Indigenous languages in the Americas share this characteristic of being agglutinative so there is emergent research on how to develop a coherent language teaching methodology (Palma, 2008). Approaches developed include focusing on a few syntactic rules to produce many words from a few root words, and a selection of root words to establish communication in certain domains (Green & Maracle, 2018). In the experience of a Mohawk community in Canada, initial studies showed that in 2 years students of the language get to B level (i.e., independent users) using this approach (Green & Maracle, 2018).

The experiences of Indigenous communities facing similar challenges against monolingual ideologies and the effects of colonization, orientations to language as a source of identity, and similar linguistic features of the language, and who have developed teaching approaches conducive to having more speakers of the language, are promising lines of inquiry to learn from and to share the knowledge generated.

Literacy Experiences Enabling Learning

The previous analysis showed how the relationship between teaching and learning was constrained by previous experiences, keeping teaching methodologies repeating unsuccessful approaches and limiting the learning experiences of Indigenous preservice teachers. On the contrary, other literacy experiences enabled or leveraged teachers to expand their teaching repertoire and experiment with new ideas. The three teaching orientations identified were strongly related to the learning environment.

Relationality

Indigenous preservice students' orientation to dialogue and learning was referenced in the previous chapter as they used a section of an assessment instrument to ask questions, give suggestions, and challenge the task and the researcher. What I also found in the storytelling interviews is Indigenous teachers' appreciation for relationships and understanding of the world through these relations. Teacher Khates provided a moving example from her elementary school years. She indicated:

Excerpt 21. Teacher Khates storytelling interview

> Nos costó mucho aprender, el aprender a escribir, no, porque copiábamos. Pero leer o entender a la maestra que son, siempre son criollas. No sé cuántas veces repetí el grado. En primer grado, segundo, nunca pasaba, nunca pasaba. Pero como en esa época nosotros queríamos aprender más. Sabemos que nos costaba porque no entendíamos a la maestra, lo que nos decía. Bueno, íbamos, creciendo, creciendo hasta que un día que pudimos aprender unas palabras en castellano. Así en grupito. Podíamos entender a la maestra y ayudarle a los otros niños, a los otros chicos para poder entender a la maestra. Por ahí para pedir ir al baño.
>
> *English translation:*
> *It was very hard for us to learn, to learn how to write, no, because we copied. But reading or understanding the teacher who always are criollas. I don't know how many times I repeated the grade. First grade, second grade, I was never passed, never passed. But at that time we wanted to learn more. We know that it was difficult for us because we did not understand the teacher when she spoke to us. Well, we were growing, growing until one day we were able to learn a few words in Spanish. In a small group. We could understand the teacher and help the other children, the other kids, to be able to understand the teacher. For example, to ask to go to the bathroom.*

In this hostile and adverse situation, Teacher Khates' love for learning sustained her, in such a manner, that even though she was made to fail and repeat several of the first years of elementary school she continued to study and became a teacher. What was significant was the teacher's framing of Spanish language learning as a group activity, as by combining all Qom students' knowledge they were able to learn a few words, and as a group, they understood the teacher and, more importantly, provided a haven to incoming students who did not yet understand Spanish.

Other examples shared by teachers included starting high school or teacher training programs with one friend or a group of friends, receiving or providing help to relatives during

their studies, and sharing concerns or pedagogical resources with colleagues. In conjunction, their successful experiences working and learning with others enabled them to promote similar relationships among their students. I observed how teachers tended to move within the classroom and establish conversations with groups of students, and not often with individual students, and to ask them, naturally, to share resources. In one college, teachers modeled a shared teaching space with two teachers in front of students. This is not to say that all relationships were harmonious and devoid of conflict. Nevertheless, the appreciation of relationships and their value to learning was observed, and it could be further enhanced.

Compassion

A second motivator of changes in their teaching approaches was compassion. Teacher Nala shared, "I want to be the teacher I did not have". The most hurtful aspects of their schooling were sources of change and finding solutions to ensure their students did not have to go through similar difficulties. This orientation extended to their work in teacher training colleges, and to past or current jobs in elementary schools and other teaching institutions. One teacher invited me to the first class of the year, in which he spoke in Qom for several minutes, and then reflected with the preservice students, who were mainly monolingual Spanish, about their feelings when not understanding the language. He finished by sharing his challenges as a child, being monolingual Qom, and promoting a reflection about how their future labor as teachers would help children feel welcomed and safe in the school. Additionally, four teachers extended this compassionate stance to criollo children, who would participate in classrooms and learn Qom. The teachers showed a great capacity for transformative action, which opened up new ways of interacting with students.

Sense of Historical Responsibility

Finally, teachers expressed a sense of historical responsibility toward Indigenous language maintenance. Teachers noticed the language shift occurring in their communities, favoring Spanish, and perceived their own strategic role as educated biliterate individuals. While in the past, students such as themselves could count on their families and network of families for Indigenous language vitality, this was no longer the case. One teacher expressed that the next 3 decades, one generation, will be decisive in the fortunes of Qom language.

In this context, teachers assumed a historical responsibility to teach Qom to the new generations, and they contemplated the value of literacy, as Teacher Khey expressed "Language is very important to talk, but writing is also very important. Because if we write the language, then this means that it will not be lost." The exploration of language and literacy promotion included the consideration of how new technologies could be leveraged for teaching Qom. Among the initiatives mentioned in their storytelling interviews, teachers were considering or engaged with developing animations for Qom stories in collaboration with a group of professional youth, working on a new Qom vocabulary, developing materials for YouTube classes, and promoting the use of an app to learn Qom vocabulary. Notably, these types of initiatives and concerns point to Indigenous language teachers' roles outside teacher training colleges as agents of cultural and language revitalization.

Summary

This chapter focused on the third research question, addressing the relationship between teaching and learning biliteracy. The relationships links between their experiences and current teaching approaches were articulated by the teachers in their interviews or established by connecting the interviews and observations, and were grouped in two, literacy experiences constraining learning and enabling learning.

The first group included three tendencies. First, personal classroom experiences during childhood facing exclusionary practices towards Indigenous languages, forced the then-learners to develop their own resources to learn Spanish. This helped explain why teachers relied on their students' own initiative to learn Qom. Second, Qom teachers introduced the acechedario based on students' knowledge of the Spanish alphabet, stressing a letter-centric approach which inadvertently concealed the complexity of learning two writing systems. Third, the belief that Qom is difficult to learn was observed as both, a strategy to resist external pressure and influences, and an expression of the dissimilar linguistic structures of Spanish and Qom, which require specific language teaching approaches.

The second group type of relationships included three tendencies. First, teachers' experiences learning with others enabled learning despite an adverse schooling environment. This type of relationship can be observed to be modeled in the teachers' interactions with their current students. Second, teachers displayed a great capacity for compassion in their desire to improve their Qom—and criollo—students' experiences over the ones they received. And third, teachers shared a sense of historical responsibility for Qom maintenance which included a focus on writing practices but also extended over to use of new technologies.

In the next chapter, I present the findings related to the experience of collaboration with Qom and Wichí language teachers, in developing an Indigenous language tool, foregrounding the logic of the DBR study.

Chapter 7 : Findings – A Cycle of Action-Reflection-Conceptualization

The previous chapters explored how Qom language teachers enacted biliteracy practices in their classrooms, how biliteracy competency developed in their students during an academic year, and both actors' perceptions about language and literacy growth and change. In this chapter, I aim to describe the dynamics and interactions between all actors—language teachers, students, and researchers—engaged in a naturalistic setting co-designing an educational intervention to promote biliteracy competency in Indigenous contexts, to answer my last research question: *How are teacher educators' pedagogical decisions influenced by their participation in the co-design of biliteracy teaching and learning?*

First, I present the process of designing the educational intervention, the artifact it produced, and report on the challenges and successes of this type of work, which allowed for the elaboration of design principles for Indigenous biliteracy materials. Then, I discuss three critical instances that molded our relationship-building process. Finally, I systematize elements of our Indigenous research methodological approach.[9]

A Design-Based Research Study, How Hard Can It Be?

Briefly stated, design-based research (DBR) studies are situated in a real educational context, where researchers and practitioners collaborate to identify a need, design an intervention, implement it in a few iterations, assess its results, and abstract design principles useful for the local actors and advance in theorization (Barab, 2014; Engeström, 2001; Penuel et al., 2011). From its use in the educational field, three aspects have been researched (a) negotiating the problem of practice, (b) co-designing, and (c) assessing the intervention. An

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[9] The remainder of this Chapter is written in the first person plural as it is conveying the collective experience—the research team plus the research participants—of reflecting together and co-designing the artifacts.

important aspect of collaborative efforts in real contexts is to account for the difference between what was planned and what was achieved (Penuel et al., 2020). Certainly, various challenges and difficulties limited aspects of this DBR study, however when collaboration flowed, much was learned.

For this analysis, the data sources were the end-of-year interviews with teachers, student focus groups, co-design fieldnotes, and the Qom language workshop fieldnote. The three designed artifacts are summarized in Table 12.

Table 12.
Summary of DBR interventions

Teachers / Dimensions	Imlaq	Wuyes	Pumjwa
Practical output: designed artifact	A teaching lesson centered on dialogue	A new iteration of teaching materials	Five bilingual informative charts about Nature concepts
Problem of practice	Students are not using Qom to communicate	Students do not have materials for self-study	Students access knowledge about Nature mainly in Spanish
Purpose and scope	Scaffold students' production of dialogue in Qom	Provide students with useful material to study Qom by themselves	Provide students with informative text that also models what they can develop with their future students
Co-design process	Qom language teacher developed the guides, we participated in the sessions, reflected on them, and helped develop	The teacher explained his previous work, indicated elements of visual design to consider, and reviewed the final document	We held sessions of research, writing together, and editing the text, Pumjwa translated, agreed on the visual design, and reviewed it together
Implementation	June 2023	Pending	June 2023
Assessment	Qualitative assessment by Language teacher	Pending	Qualitative assessment by Language teacher
New Implementation	Pending	Pending	Pending

Challenges

A collaborative relationship is influenced by previous experiences. In the case of both teacher training colleges, Indigenous teachers had previously worked with other researchers specialized in Indigenous contexts. There were two types of research projects commonly executed in these colleges. One is research conducted by anthropologists, linguists, and sociolinguists to better understand the experiences of Indigenous individuals in teacher training colleges and Intercultural Bilingual Schools. Several researchers have long-standing partnerships with institutions and individuals. While there were varying levels of participation in these experiences, the emphasis is on the description and understanding of the phenomena. The second type were projects as part of outreach initiatives by professors or students from universities located close to the teacher training colleges. During the year we visited the colleges, we were able to witness one initiative to provide academic workshops, as a COVID-19 global pandemic learning recovery strategy, and a series of workshops to provide arts related strategies for early childhood education degree students. In these instances, Indigenous language teachers agreed to open their classrooms for the activities but were not part of them. This type of collaboration influenced language teachers' expectations of the research.

The first challenge, therefore, was to go beyond teachers' familiarity with only being interviewed for research purposes and build the idea of co-designing an educational intervention, which was a less familiar concept. In part, an educational intervention demanded we develop a shared stance about the students, focusing on their potential to learn, and assuming the responsibility of facilitating their learning through a strategy or activity. We also had to agree on feasibility, as a few ideas demanded resources we did not have at the time (e.g., traveling and interviewing speakers of the language) or would have taken more time than the available timeline. Also, during the process, the rhythm of work was given by the colleges' culture and

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calendars, as it was always clear our research was subordinated to their job as teachers, and probably due to the research project activities not being sufficiently integrated into their work activities. Particularly at the beginning, we did not have a shared language to talk about the DBR product. I tended to use the term *intervention* which had a negative connotation, and finally had to make an effort to consistently talk about "our project" which represented our shared work.

What was crucial for the research team while facing this first challenge was to avoid any shadow of imposition. Even when the colleges' authorities supported the partnership, provided spaces for our activities, and were attentive, we never asked them for help to remind teachers of our agreements or exercise any type of pressure to keep the research going. Except for the first informative meeting, all contact and coordination were done directly with the teachers and students, which built trust, even though it might have made some cancellations or rescheduling of activities easier from the perspective of the teachers. This was a deliberate choice, especially as a commitment to horizontal relationships within a context in which Indigenous individuals tend to be treated with hints of authoritarianism.

The second main challenge was the collaboration with Spanish language teachers. We were not able to co-design with them. There were various reasons for this. In terms of project management, priority was always given to Qom and Wichí language teachers' schedules, requests, and suggestions. While the research team established rapport and a level of trust and collaboration with Spanish teachers, we started to see and interact with them less, as their schedules were different from the Indigenous language courses. Gradually, this created the impression that our work was mainly or exclusively with Qom and Wichí language teachers. Coincidentally, in both research sites, there was a change of Spanish language teachers between Iterations 1 and 2, in one case due to maternity leave and the other due to a leave of absence to

pursue a research project. So, any progress we had in relationship building was lost at the start of the second iteration.

However, what we considered a more influential factor was that in terms of curriculum and school culture, language teachers of Spanish and Qom were not expected to work together. Each research site had a work group for Indigenous language teachers, who met to discuss and decide interventions for language learning and, also, identity and other cultural topics. This group did not include Spanish teachers, nor were language and literacy curriculum goals usually connected as common concerns of language teachers. What did happen was non-Indigenous teachers using Qom stories, or elements of cultural knowledge, as content for some classes (i.e., representing a Qom story or researching a concept within Qom culture).

In one college, there was a predisposition in the Qom and Spanish teachers to work on a joint project, with us as mediators since their schedules made it impossible to meet in person. They had proposed to address simultaneously some features of Qom and Spanish syntax, within a communicative approach to teaching language. As this happened as the second iteration was finishing, we were not able to facilitate timely and sufficient communication between the two willing teachers to co-design and implement this initiative.

The third main challenge was to conduct and observe the second implementation of the DBR product, mainly given time constraints. Although the joint worked was planned, Indigenous language teacher (and other teachers) had to comply with the institutions' commitments, which in one case blocked with additional activities the last week of classes, and other issues such as unexpected class cancellations, and preparatory activities to commemorate historical dates, which made the observation of the second implementation not possible.

Notwithstanding these challenges, when the bridge between researchers and practitioners was established and the common creative and implementation space was created, wonderful things happened. I use the work with Wichí Teacher Pumjwa as an example of the DBR process and the learnings it produced.

When It Worked: Professor Pumjwa

Professor Pumjwa desired to develop informative texts about nature that provided visual and textual information to young readers. He showed us his collection of teaching support materials created during his career (see example in Figure 8). This well-guarded portfolio had hours of research, drawing, and selection of useful materials. He only shared it with us in the third encounter.
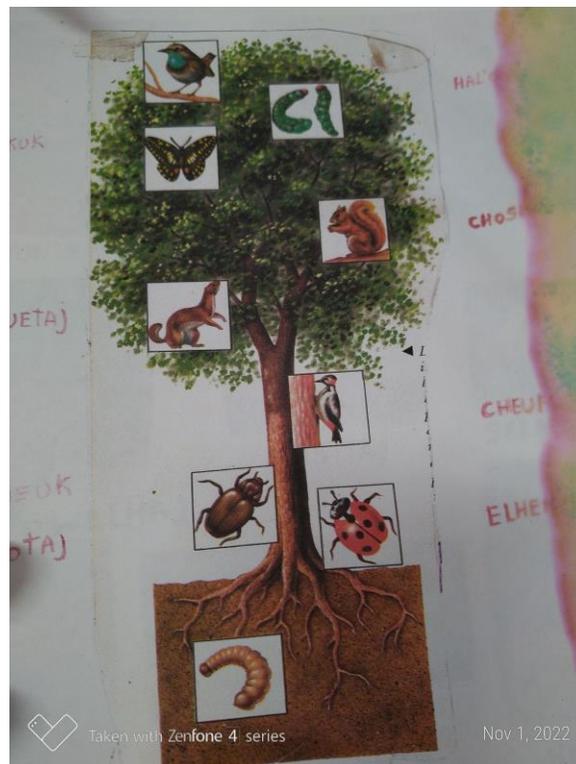

Figure 8. Pumjwa's example of support material

Note. Each animal has a name in Wichí. The page shows signs of damage by humidity.

Teacher Pumjwa further elaborated his approach to teaching Wichí (transcription slightly edited for briefness and clarity):

Excerpt 22. Teacher Pumjwa storytelling interview

Primero planifico todo un plancito, todos los temas que se van a dar en el día, el contenido, es muy mucho. Entonces, elijo un punto, por ejemplo, el alfabeto: "es así y así, tiene tantas consonantes." Bueno eso es el primer año, cuando los chicos ingresan trabajan con eso. Después un poco de historia, de donde venimos, de donde somos, a que viniste acá, a aprender.

Siempre preguntitas que se hace uno y con eso arranco la clase como dando ejemplos. Buscando palabras, términos que antes se usaban y que ya no se usan, yo pondría 'rescate de palabras.' Hay términos que ya no se usan más y le pregunto a los chicos y desconocen, o sea, no es que desconocen, no saben el significado.

Después trabajo con láminas, con figuritas . . . Primero el nombre del tigre y después del wichí. Yo siempre insistía en eso, trabajar con materiales gráficos . . . Porque al chico siempre le gusta observar cómo se llama aquel bichito, por ejemplo, con 'ele', 'wahat', [loro, pescado] y el chico aprende más rápido con eso.

Basando siempre en la realidad, en la zona, las zonas siempre hablamos distinto y el docente tiene que adaptarse, esos son comentarios que les hago a los chicos y siempre trabajar con objetos, siempre, nombre de objetos árboles, de insectos, minerales, utensilios, mascotas.

En tercero más que nada las frases, escribir frasecitas o esquelitas y así con frases.. después que pronuncies de acuerdo a su lengua, que escriban y que vayan leyendo. Como vas a leer esto con signo de puntuación, con coma, porque el glótico es la mas principal que hay que pronunciar.

En cosmovisión, hablamos del más allá, si no crees en Dios que no, que cada uno tiene su creencia, cada uno es libre de elegir, pero siempre apuntándolos a que pensás vos de qué, cómo lo ves . . . El mundo nuestro ve como que es el conocimiento del más allá. El más allá es trabajo del receptor, el chamán, el curandero que le dicen, ese es el receptor, como que hace contacto con el del cielo hacia la tierra y cuando hay una cosa así, un conflicto [ya sabían que iba a pasar].

English translation -slightly edited-:
First I plan, all the topics that are going to be taught during the day, because the content, it's a lot. Then, I choose a topic, for example, the alphabet: "it's like this and like that, it has so many consonants." Well, that's for first year students. Then a little bit of history, where we come from, where we are from, why did you come here, to learn.

I always ask a few questions and then I start the class by giving examples. Looking for words, terms that were used before and are no longer being used, I would call it 'recovery of word.' Some terms are no longer used and I ask the students and they don't know, I mean, it's not that they don't know, they don't know the meaning.

Then I work with pictures, with graphics . . . First the name of the tiger and then the Wichí word. I always insisted on that, working with graphic materials . . . Because the child always likes to observe what that little bug is called, for example, with ele' wahat [parrot, fish] and the child learns faster with that. Always based on reality, in the territory, in the territories we always speak differently and the teacher has to adapt. I share these comments with the students and remind them to always work with objects, always, names of objects, trees, insects, minerals, utensils, pets.

In third year, I focus on phrases, write little phrases or short notes . . . then read, pronounce them according to their language, to write and then read it. How are you going to read this with a

punctuation mark, with a comma, because the glottal sound is the most important thing to pronounce.

In cosmovision, well, we talk about the world beyond, if you don't believe in God, no, each one has his own belief, each one is free to choose, but always asking them: what you think? how you see it? . . . Our world sees it as the knowledge of the beyond. The beyond is the task of the receiver is, the shaman, the healer they call him, that is the receiver, he makes contact with heaven from earth and when there is something like that, a conflict [they had knowledge beforehand].

This articulation of his Wichí literacy teaching approach contains an arch with several important elements: (a) teaching the alphabet and identity and history topics, (b) recovery of words, (c) vocabulary with pictures recognizing dialectal varieties, (d) writing and reading of phrases, (e) cosmovision, all based on his lesson plans. This approach to teach Wichí is interwoven with how future teachers should teach the language to elementary grade students. In this context, Pumjwa wanted to develop together a visual vocabulary (words with pictures). His proposal was probably influenced by his assessment of our next-to-null knowledge of Wichí. In the first session together, he tested our knowledge and teased us about it.

However, at this moment in the project, we had already identified how much of the language teaching courses stayed within the confines of alphabet and word teaching and negotiated with Pumjwa a more advanced type of text. He shared his diagnostic about the lack of books about Nature from a Wichí perspective, and the need to have more scientific or informative text, on top of traditional stories. He envisioned a book, with attractive images and information for a speaker of the language and a learner to interact. As a book would have taken us more time and resources than available, we agreed to focus on developing one-pagers of informative text about selected animals. This initiative could easily be expanded with new sets of five animals from the Chaco ecosystem.

First Iteration

Pumjwa selected five birds and we researched some information about them. The next step was to exchange information from these sources (decontextualized or general information)

and Pumjwa's knowledge (contextualized, local, and experiential knowledge). Pumjwa dictated the information he wanted to transmit, in Spanish, following an encyclopedia entry structure. We asked questions and made suggestions. He then took those notes and wrote them in (i.e., translated them to) Wichí (see Figure 9).
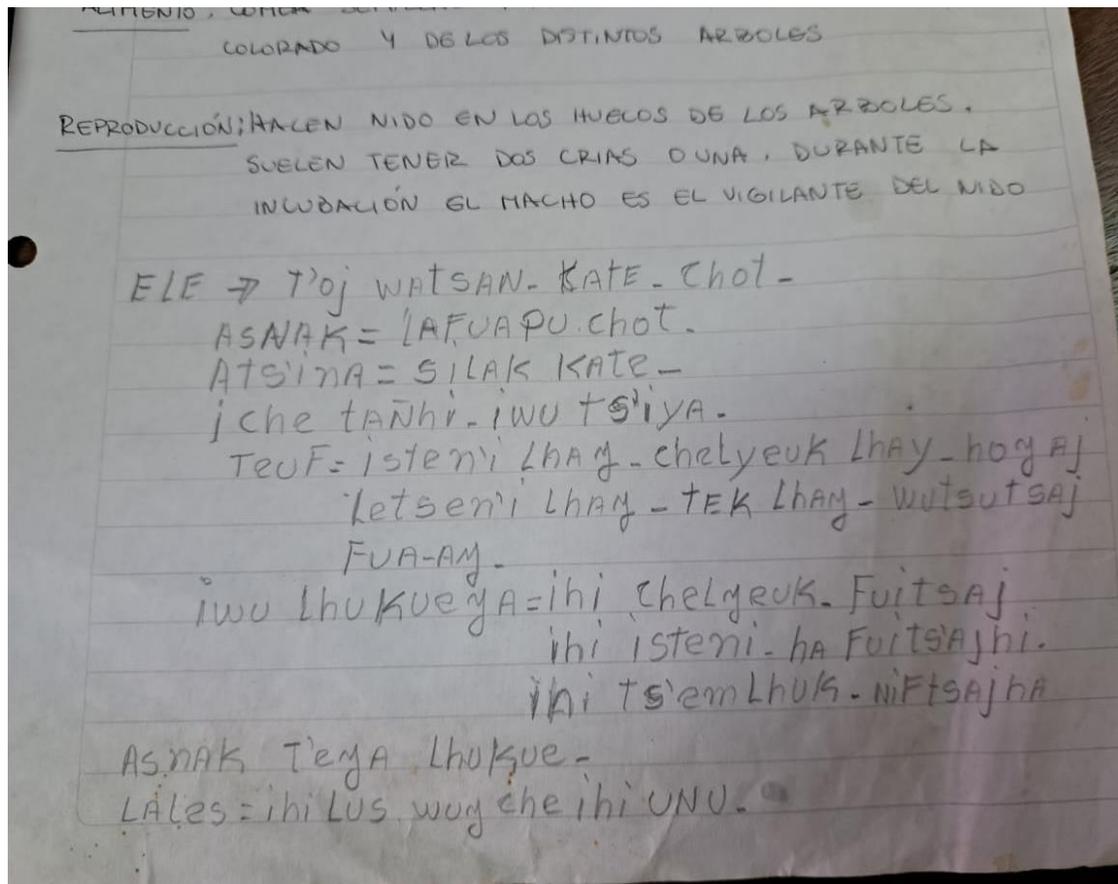
Figure 9. Pumjwa handwritten text with information about 'ele' (parrot)

We had a session adjusting the Spanish text to the Wichí one, and further discussing his vision for the visual arts design. As placeholders, we used Pumjwa's own drawings, which he wanted to do again or find suitable replacements as he felt the quality of the work demanded it. One important decision was that even though the text was bilingual, access to Wichí was

independent and privileged. So, these one-page informative cards would be read in Wichí, and a Spanish version was provided on the back page (see Figure 10).
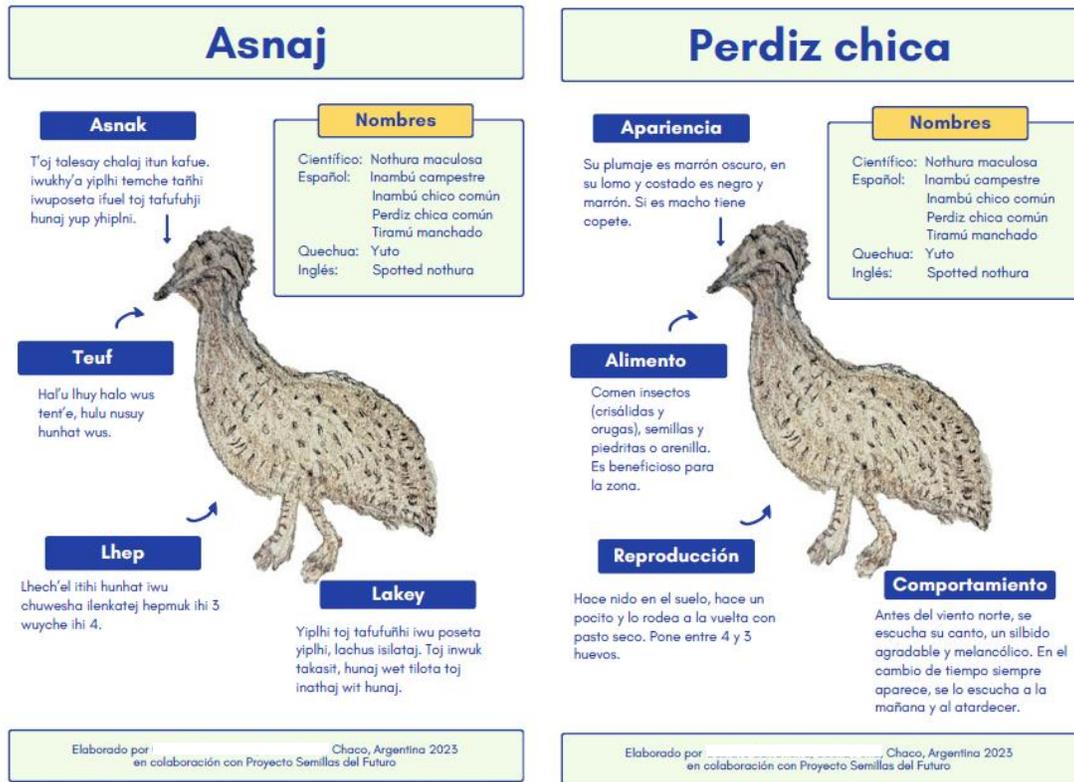
Figure 10. First iteration in Wichí and Spanish

Second Iteration

The second iteration directed our efforts to refine the visual presentation and work with students to develop their own materials. It also encountered difficulties in terms of time, and postponement due to the teachers' health issues. In terms of visual presentation, one question was addressed again, if the audience were young or adults or children. The second question was about the replicability of the design, exploring if it was possible to share some digital templates for students to work. At the same time, there was a need to produce similar materials without technologies, something Teacher Pumjwa already had expertise. As Wichí students in the college

where we worked were a minority, groups of 1 to 5 each year, coming from the same area, the issue of dialectal variety did not take too much discussion.

Teacher Pumjwa also felt that students still needed more opportunities to develop their literacy in Wichí, so he chose to develop with a version of materials closer to visual vocabulary, his initial project. Nevertheless, he expressed his desire and plan to write informative text with 3rd year students.

Figure 11. Second iteration in Wichí

In terms of the design of the second iteration of material, teacher Pumjwa valued the use of pictures, to which he referred as "real", but asked the team to work on a new combination of the design from the first iteration with the pictures of the second one (see Figure 11).

Design Principles for Indigenous Text-Based Language Teaching Materials

One important aspect of the DBR study was to abstract design principles that translate theoretical assumptions into practical orientations, were useful in other projects, yet rely on the agency of educators to be adapted and be responsive to different contexts (Hanghøj et al., 2022; Penuel et al., 2011). In this experience, we had a few broad guidelines at the start of the research, such as being useful to Indigenous language teachers' declared priorities, documenting the process for replicability, and nurturing Indigenous identity and love for the language. Therefore, the design principles were a first effort to systematize valuable aspects of the co-design process.

There were two main sources to articulate these design principles. The first one was the observation of current strategies and materials present in the language teaching courses. On top of the classroom recordings and observation fieldnotes, we took notes of projects, strategies or activities mentioned by teachers and students as particularly enjoyable or useful for Indigenous language learning. We also took photographs or asked for copies of text-based materials already circulating among students and asked one teacher training college to share a repository of selected students' work from previous cohorts. The second source was the conversations sustained during the co-design and reflective sessions, including the assessment of the designed artifacts. The design principles were systematized by the research team and presented to the teachers for their feedback. We identified four:

(a) Respectful of dialectal varieties

(b) Indigenous stance

(c) Materials as building blocks

(d) Low tech, low cost

The following description of the four design principles for Indigenous language teaching materials start with the reasons related to our findings in this study that made the principle relevant, and then a formulation of the principle to be applied: its main characteristics, the actors and moment the principle could applied, how it should be implemented, and suggested criteria providing insight into its successful application (Hanghøj et al., 2022).

Principle 1. Respectful of Dialectal Varieties

Indigenous speakers are attuned to identifying dialectal varieties which act as markers of identity. Even though new patterns of sedentarization and forced economic migration have shifted traditional territory occupation creating communities employing several dialectal varieties, Indigenous language teachers considered it crucial to show respect to dialectal variety and not impose one variety over others. In this study, teachers pushed back to discourses about language standardization, which were perceived as an imposition of some actors—Qom groups or external—to native speakers. If materials were perceived as oblivious or silent on the matter, they were read as not showing respect for linguistic diversity and identities, and therefore not used. However, text-based materials fixed written elements of dialectal varieties.

This principle mirrors what often occurs in the classroom. In this research, teachers shared with their students their origin and dialectal variety, introduced words and phrases mentioning examples of how it varies across communities, and invited students to ask Indigenous language speakers in their families to complement their knowledge. This principle should be applied by the author or team of authors of Indigenous language materials when developing said materials.

There are two main ways to apply this *principle of respect to dialectal varieties*. One is to present dialectal varieties simultaneously on the page, for example using a slash (/) to show two

or three ways of conveying a word, writing phrases one below another, or having parallel columns or opposite pages indicating on top the dialectal variety in use. The second possibility is to make explicit at the beginning of the text which dialectal variety is being used and add an invitation at the end for readers to research and complement the text with their dialectal variety, leaving space for those notes. These ways of applying the principle in paper-based text could be made more dynamic when using technology, such as apps or software. It is very common in dominant languages such as English and Spanish, to be able to choose accents for audio-based interaction (i.e., Google Maps virtual assistant) or preferred language variety to write texts (i.e., Word Microsoft proofing language preference). While these types of adaptations demand time and resources, these examples show the concrete possibilities of considering this principle in Indigenous language materials.

The main criterion which provides insight regarding the successful application of this principle is for Indigenous language teachers to assess that dialectal varieties are treated respectfully. However, attention needs to be paid to learners of the language, the amount of information and possibilities do not need to be exhaustive so that learners are not overwhelmed but rather encouraged to cultivate cognitive flexibility and attunement to dialectal varieties.

Principle 2. Indigenous Stance

Much of what is written about Indigenous culture and languages comes from an outsider's perspective. Even in short and simple alphabetization materials, the words chosen to illustrate the use of a letter have implicit ideas about what vocabulary is more useful to those who are learning to read and write. If the framing of a text is perceived as undermining Indigenous identity or languages, its use was soon abandoned.

This principle aligned with Indigenous authorship of texts and materials. When Indigenous authors write materials, they tend to upfront Indigenous cultural knowledge and

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language and use an appreciative tone to convey information. Indigenous authors are informed by their experiential knowledge, which is extremely valuable as it has not been elaborated often from their unique vantage point and in their own terms. However, sometimes experiential knowledge is contrary to "book" knowledge, which has already been written and studied about, in this case, Indigenous language by academics. This tension should be addressed, and its different possible outcomes—integration of perspectives, rejection of one or the other, explanation of one by the other—stated in the text. Moreover, an Indigenous stance is characterized by engaging in meaningful topics for the future of Indigenous communities, such as Indigenous rights, an Indigenous perspective on history, and asking relevant questions about cultural maintenance and change. This principle should be applied by authors and collaborators, in the steps of writing, revision, and edition of the texts.

The *principle of an Indigenous stance* can be applied by careful consideration of the locus of enunciation, marking who is writing and from where, and an orientation in writing warranting that Indigenous knowledges are appreciatively treated, Indigenous communities' experiences and current situation are adequately historized, and Indigenous dreams and hopes for the future are acknowledged. This could be done, by stylistic choices, such as the use of the first person (singular or plural) and the type of adjectives selected; but also, by deconstructing some stereotypes, explaining historical processes, and recognizing Indigenous actors and agency.

The main criterion that provides insight regarding the successful application of this principle is if it is possible to notice Indigenous authorship and an empowering tone toward Indigenous communities. Indigenous authors are particularly aware of how written text can reinforce stereotypes or transmit limited possibilities for the future of Indigenous communities.

What is also necessary to consider—and avoid—is the tendency to romanticize Indigenous pasts, essentialize Indigenous identity, or reify Indigenous knowledges.

Principle 3. Materials as Building Blocks

Indigenous language teaching materials were scarce. There were less than a dozen grammar treaties and dictionaries published, a few of them by Indigenous authors. Textbooks to teach Indigenous languages or lessons to support early literacy were promoted by Ministries of Education, at the national or state level, although directed to Elementary School students. During this study, books wrote to teach Qom or Wichí to teachers were not seen circulating in the teacher training colleges where research was conducted. This type of material could be valuable to Indigenous preservice teachers, and other Indigenous youth, committed to language revitalization. However, limited access to printed materials, due to cost and lack of networks of distribution, was one of the challenges to face.

The teachers in this study valued their autonomy in selecting the topics and order to teach the language, desired to be responsive to each cohort's reality and interests and considered that an effective methodology—or group of strategies—to teach Indigenous languages to all students had not been identified yet. Teachers value nonlinear curriculum designs, with multiple entry points to develop a capability or approach content. For this reason, materials should be thought of as small building blocks, self-contained, and open to be used in different orders depending on the cohort. At the same time, it is useful to make explicit the connections between them.

The *principle of materials as building blocks* can be applied conceptually by making explicit the language ability that is promoting and incorporating as complete a learning experience as possible while maintaining brevity. In practical terms, each material (e.g., lesson plan, unit, project, chapter) should incorporate sufficient information to identify its purpose and use, the characteristics of the learner, an indication of language ability and difficulty, and

suggested connections with other materials. It is also valuable to have information about the author or team of authors, place of origin, date, version, and contact information with an invitation to send feedback. This principle should be applied by the materials' authors and users. The criteria to assess the successful application of this principle are that materials are used in different orders and combined with other Indigenous language teaching materials. In this way, their flexibility and openness have proved valuable.

Principle 4. Low-Cost, Low-Tech

Language teaching materials we observed currently circulating among language teachers and students were easy to disseminate and not expensive. A summary of their physical characteristics constituted the basis to characterize this principle. Low-cost, low-tech materials are single-page or up to 5-page documents, which have a limited use of images and colors to facilitate copying them. They condense information, and do not have too much blank space. The digital version of the documents must be easily shared via e-mail and instant messaging applications and take into consideration the file size. Regarding visual arts design, professional-looking formats, especially similar to texts present in higher education contexts, which incorporate a few icons connected to elements of the Indigenous culture (i.e., different "yica" designs for Wichís) are appreciated. When representing the human form, Qom people representations should be expansive, that is illustrating traditional Indigenous practices and new roles (e.g., teachers, lawyers, geographers, engineers), both men and women, in urban and rural settings, and in interaction with many different populations.

The *principle of low-cost, low-tech* should be integrated into the initial phase of design, visualizing how materials are going to be distributed and how their use is sustainable. Low-cost refers to affordable ways to copy it and disseminate it, however quality materials would require

the expertise of several professionals. Although it might be seen as a constraint, taking it into account, particularly with the purpose of materials having a life of their own, would make them more accessible. This principle should be applied by the co-designers at the beginning of the process and checked at the end. The criteria to assess the successful application of this principle is that the materials are affordable for Indigenous teachers and students and are easily shared electronically.

In summary, the DBR study with its cycle of action, reflection, and implementation provided opportunities to elicit some desirable features of Indigenous language teaching materials. These principles emerged from current practice and therefore are feasible to be accomplished. Several concerns have not yet been addressed by design principles. For example, how do materials sustain, promote, and orient communicative interaction around literacy; and how do they contribute to transcending the limits of the classroom to connect the school with the community. In the circumscribed space of the DBR study, these concerns were not at the forefront of our deliberations and did not end up in the formulations of these principles. Nevertheless, they are a contribution to the ongoing need to think about how literacy in Indigenous languages and biliteracy is taught at teacher preparation programs and the manner in which it could continue to advance. Moreover, as the previous chapter showed, there are key considerations about teaching agglutinative languages and promoting biliteracy to frame a more robust Indigenous language teaching approach. This is part of a potential future agenda of research and practice.

Critical Reflective Episodes

An important feature of DBR studies is reflection. At the end of the process, the research team reflected on the whole year, and we selected three critical episodes in defining the relationship between ourselves and the language teachers.

Trust and Allegiances

One aspect of the relationship that was directly asked of us or indirectly referenced in the stories shared was the topic of trust. Teachers asked, directly or indirectly, who were we, besides researchers? Although identifying ourselves as Indigenous, how Indigenous were we? Who do we represent and to whom do we ally ourselves? Considering that members of the research team had been working in Indigenous education or Indigenous projects for over a decade, it was notable the need to build trust. Teachers exhibited a healthy skepticism, and it was only time and conversations which brought us closer.

What was notable was the use of storytelling to ask us about allegiances. On one of the first encounters with a pair of teachers, we talked about special or useful stories, and they narrated one about a common character, the intelligent (also astute, sharp, or wise) fox. In this story, the fox was working under a foreman, but desired a relationship with a woman from the foremen's family. The story was about how the astute fox tried to fool his boss to be with the chosen women, challenging social hierarchies. In our reflective meeting we realized that this particular story, was heard before in the context of allegiances. As Indigenous researchers we were in a strange position, as we had to obtain permission from, enter in agreement with, and report to college authorities, non-Indigenous, and at the same time we identified ourselves as Indigenous and wanted to work close to Indigenous language teachers. The question was, where were our allegiances? But the question also implied the possibility of being accepted as an Indigenous professional peer.

The way we moved forward was to develop our relationship with the teachers. As months went by and we got to know each other better, there was a gradual increase of nearness in the relationship, more openness in the topics we discussed, and familiarity in how we addressed each other. Additionally, we decided to share or report first to teachers, and then to college authorities, which by their multiple responsibilities were not following the day-to-day of the project. This reflective moment helped us made explicit one implication of our Indigenous researcher's identity.

Suspending Judgment

The second episode selected happened during an analysis meeting. We had received a transcript from one of the classes and in preparation to share it with the teacher we read it together and thought of what was happening in the class broadly related to biliteracy. This transcription contained the practice of reading aloud in Qom. I had a hard time understanding what then became the "breath life" biliteracy practice. From my perspective, meaning of the text was lost, I could not understand its pedagogical contribution, or even how it nurtured Indigenous identity if the meaning of the text was not part of the process. We discussed how to assess students' level of understanding, the possibility that this was replicating traditional schooling practices, the purpose of reading as an activity, and from what criteria we were valuing Indigenous teachers teaching.

We had a strong exchange of ideas, and I was amazed by one of the researchers' defense of Indigenous teachers. In the end, she asked the team to suspend judgment and talk to teachers about the meaning they attributed to such activity. When we had the opportunity to talk to teachers and analyze this practice, I could start to see the meaning of it. It was a learning experience, a protective stance towards our co-researchers, and the benefits of multiple perspectives to explore reality.

Creating New Dialogues

The third critical episode occurred during the Qom language workshop. All participants, 4 Qom language teachers and 5 researchers had the opportunity to evaluate the gathering and the general feeling was extremely encouraging. We had a material prepared with questions for reflection about the purpose of teaching Indigenous languages, the issue of dialectal varieties, a preliminary list of biliteracy practices, and their feedback on the idea that agglutinative languages required a different teaching language methodology. Teachers generously shared their perspectives, asked to be audiorecorded, and took the blackboard to explain aspects of Qom language and of their own teaching. Some of the most animated conversations were among the teachers themselves discussing fine points of Qom language.

One salient aspect was how teachers framed this workshop as a conversation between them and Indigenous professionals deeply interested in learning about the language. They shared that this conversation was a source of hope, a space they enjoyed and wished to be invited again, and latent with potentialities. For the research team, it alluded to the possibilities opened by the collaboration between Indigenous actors who had different opportunities to access higher education, and who brought to the discussion of Indigenous communities' futures a few useful tools from their disciplinary training. It also reminded us of the loss that not speaking the Indigenous language of our parents and grandparents meant and the need to reach elders, speakers of the language as well as Indigenous language teachers to have new dialogues about multiple paths for Indigenous language and literacy revitalization.

On Relationality and Reciprocity

A preeminent goal in our reflection about the research conducted was to better understand the meaning and implication of being Indigenous researchers working on our own communities. There was a sense of being pioneers in this part of Argentina, as being the first

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time research spaces were exclusively Indigenous, the reflective meetings, interviews, classroom observations, and language workshop. One thing was abundant, laughter. But there was serious interrogation about how to construct the desired horizontality, how we were being positioned by the teachers and students, and the colleges' authorities, and how we were framing the relationships. A central critique of research in Indigenous contexts is that it was premised on otherness, situating Indigenous communities as "other than us", sometimes "the Other" of modernity. If we were to reject otherness, then how could our different premise be described.

At one level we saw ourselves in the teachers and students we worked with, and some interactions in the interviews or classes signaled that they could also see themselves in us. There were shared life experiences, concerns, and even shared relatives. If there were concerns about a lack of objectivity, this shared sense of "us" did not mean we agree on everything, or that trust was easily achieved. At the same time, it was important to notice that teachers had a disposition to include in this expansive "us", criollo children and youth who would need their help and support learning Qom. So, ethnicity was not the defining factor, although there was an expectation that as Indigenous individuals ourselves, we would not engage in attitudes expressing discrimination, disrespect, or condescend so commonly encountered by Indigenous peoples in interaction with the wider society.

At another level, our disposition was nurtured by a recognition of a shared human identity, an expansive "us" based on the perspective that life in this planet is based and can flourish when adequate attention is paid to our interconnectedness and interdependence. These fundamental relations between individual and society, human and nature, the current generation and future ones, have had conflicted histories and are currently going through profound redefinitions. What our study made us reflect, was the possibilities opened by cultivating some

research procedures, inspired by these attitudes of an expansive "us" and a recognition of interconnectedness, and directed to constructing a more horizontal relationship with Indigenous research participants.

Shared Knowledge

Many interviews created an intimate space, with a current of emotion that moved us all. Teachers shared painful family and personal memories, the obstacles and joys of their educational trajectories, and their visions and dreams for the future. In one case, a teacher offered us a song to illustrate his point about cultural knowledge. In another, a teacher mentioned the interview made her revisit many past emotions. In many cases, teachers were eager to continue the conversation and offered their time if we wanted to meet again. As Indigenous researchers, we also had an opportunity to share a few personal anecdotes and stories that reflected similar experiences, albeit from our parents or grandparents.

As a team, we decided to give back to each Indigenous teacher a copy of their transcribed interview. Within two or three weeks of the date of the interview, we arranged a meeting with (most of) the teachers and provided a printed copy of the transcription. This took almost a ceremonial interaction, as we sat and contextualized this action as an effort to transcend extractivist and colonial research practices, particularly toward Indigenous actors. We mentioned how grateful we were for their generosity in sharing their stories and reflections, and we viewed this process as knowledge creation, describing teachers as the owners of that knowledge. We explained that we would keep working and analyzing the interviews, and—as it was explained in the letter of consent—we would anonymize their interviews and collectively process them to share findings at a congress or journal.

Indigenous teachers were moved, surprised, happy, excited, and/or grateful for receiving their transcriptions. They mentioned, for example, surprise at the number of pages necessary to

cover 1 hour of conversation (between 12–15 pages). They were moved by seeing their words in writing and printed, and some of them mentioned their desire to share this document with their children or to use it as a basis to write more about their lives; one teacher asked us for the digital file to do so. We sensed that this giving back of the interview information contributed to trust.

Following this line of thought, we shared selected classroom videos of their own classes with the teachers, with the agreement that videos were for personal view and reflection purposes. All teachers were appreciative of having videos of themselves and a few shared observations about their own teaching.

Authorship Protocols

A salient object of reflection was related to authorship of the artifacts we co-designed. Indigenous language teachers had their own teaching materials in different phases of elaboration, from unique and handwritten ones to others already circulating in a wider circle. Teachers shared their materials later in the relationship with the research team when threats of being plagiarized were dissipated. Conversation with teachers led us to understand the importance of making explicit arrangements related to authorship.

To develop the authorship protocol, we researched practices in the local Indigenous context, current regulatory framework in the country, and Indigenous global experiences with issues of authorship and publishing (AIATSIS, 2015; Intellectual Property, 1933; Project for Declaration on Indigenous Peoples Rights, 1997; Hernández De La Torre & Villaseñor Tinoco, 2018; Hromek, 2022; Huenchuan Navarro, 2004). The reviewed sources clarified the difference between patrimony and traditional knowledges understood as shared and collective heritage of Indigenous communities and individuals, and Indigenous intellectual property such as original work, practices or innovations developed by Indigenous individuals or communities.

We elaborated five considerations about authorship and shared it with the teachers

collaborating in the DBR to gather their impressions and feedback. One relevant point had to do

with protecting the relationship between oral tradition and published text, meaning that we

should not automatically accept what has been published over oral tradition or storytelling. As

written work about Indigenous communities has often been done by researchers external to the

community, there is a sense of vigilance over the value assigned to what was written compared

to experiential knowledge. This critical posture towards written accounts of Indigenous lives and

worldviews had similarities with Mohawk scholar Simpson analysis of how the field of Iroquois

studies was generated through a colonial frame.

In her book Simpson asked "How to stop a story that is always being told? Or, how to

change a story that is always being told?" (2014, p. 177), highlighting the power of narration to

frame past, present, and future realities. Simpson made explicit how "the story that settler-

colonial nation-states tend to tell about themselves is that they are new; they are beneficent; they

have successfully 'settled' all issues prior to their beginning" while, in opposition "Indians, or

Native people, are not imagined to flourish, let alone push or interrupt the stories that are being

told" (2014, p. 177). For that reason, her research interrogates how stories about Native

communities and Mohawks specifically are told. She explained:

> When I started to do my work on a topic that simply matters to the Mohawks of Kahnawake – the
> question of who we are, and who we shall be for the future – I found that anthropological histories
> on the Iroquois and analytics used for cultural analysis were exceedingly ritualistic and procedural,
> and so much so that they privileged particular communities and peoples in ways that stressed
> harmony and timelessness even where there was utter opposition to and struggle against the state…
> As an anthropologist I always found such portraits of Indigenous peoples to be strange in light of the
> deeply resistant, self-governing and relentlessly critical people that I belong to and work with.
> (2007, p. 68).

To counter established narratives, Simpson (2014) critically analyzed the configuration of

Iroquois studies field as the construction of this "out-of-the-way place", describing the

sociological and historical context of the first ethnological work on the Iroquois Confederacy in

the 19th century. It is most telling that one of the founders of Iroquois studies, Lewis Henry Morgan, originally participated in a hobbyist club in Aurora, New York, that engaged in *playing Indian*, that is, donning the garb, writing speeches, doing as one thinks Indians did. As Simpson analyzed it, this happened at a time of anxieties related to industrialization and the search for American identity and manliness, therefore these first ethnologist created the Indian against who they could construct their own identity and nationhood. More importantly, Simpson (2014) traced how the genesis of academic work on her Indigenous community left an imprint still present in the current canon for Iroquois studies, and the practice of that subdiscipline to authenticate Iroquois culture, and make tradition, structures, and rites visible. Simpson argues their unspoken assumption is that authentic Mohawks live in the past, and that makes it almost impossible to understand current practices and political struggles, particularly those directed towards constructing a different future, and challenging long-held conceptions of American citizenship and identity.

In our experience, teachers had a critical perspective on any written material about Qom people and language, reflective of this realization that written text inscribed their experiences and knowledges in discourses and perspectives which might not be representative of their views. Authoring original material was an opportunity to contribute to rewrite Indigenous peoples' history. This consideration showed the potentially transformative space generated by the conversation about authorship.

Other points considered in the protocol were to reach agreement on naming communities, places, and concepts as how Indigenous individuals prefer to be called or named, obtain cultural permission when necessary for some subjects or practices—for instance in this context teachers explained some traditional stories are not adequate for children—, identify all Indigenous

contributors to the process, if and how one or two languages will be used, and include specifications about dissemination of the material, particularly online.

Summary

This chapter illustrated some of the dynamics put in motion by the journey we embarked on doing a DBR study. While the narrative of the experience aimed to transmit cohesiveness, the process had growth spurts and plateaus, and a dose of uncertainty. After overcoming the challenges stated, which provided important lessons learned for future iterations, the DBR study created a bond between researchers and teachers to image, design, and implement a new idea with valuable results.

Teachers remarked, above all, the possibility of reflecting with others about Indigenous language teaching and learning. Teacher educators were influenced to examine new ideas about how to teach the language and they tried new strategies or materials. Pedagogically, the projects did not embody a major departure from Indigenous language teachers' practices, nor were designed from a new or completely different teaching or learning approach. The process, however, did promote a *radical* change, in the sense that the word radical refers to forming the root. The DBR cycle asked us to engage deeply and examine assumption about how Indigenous languages were and could be taught. As the Qom Language workshop exemplified, an interdisciplinary approach, with speakers and learners of the language, could be a contribution to deepening this reflection. The design principles, reflective stance, and Indigenous methods approach, including authorship protocol, provide a guideline to orient future endeavors.

Chapter 8 "You will have the blessings that we didn't have". Discussion and implications for research and practice

Summary of the Study

This design-based research (DBR) study followed two Indigenous preservice teacher cohorts at two teacher training colleges in Argentina in their language courses, Spanish and Qom, during one academic year. It explored how biliteracy practices were enacted to develop Indigenous students as biliterate individuals, a necessary step to then promote bilingualism and biliteracy in intercultural bilingual schools. Also, it invited Indigenous language teachers to co-design an artifact to promote Indigenous language learning and based on the reflection about this experience abstracted design principles. Through classroom observations, storytelling interviews, and literacy assessment instruments I found that Indigenous language teachers engaged in six biliteracy practices which prioritize nurturing Indigenous identity, cultural knowledge sharing, and pride for their language, and after the first year of classes students and teachers were appreciative of students' progress learning Qom.

Findings also showed that Indigenous preservice students had a weak starting point in terms of Spanish reading comprehension skills and most of them in the observed cohorts had no previous knowledge of Qom. Indigenous language learning was considered sufficient regarding the goals of knowing basic words and greetings, class management phrases, and decoding but did not achieve a level of conversation and personal writing in Qom. Biliteracy practices and literacy teaching were influenced by Indigenous language teachers' previous language learning experiences. These experiences included teaching literacy strategies directed either to adult Qom speakers who were in the process of being alphabetized or to Qom children's early literacy approaches. Both cases had learners different from current Qom youth studying to become teachers with no knowledge or very little knowledge of Qom. The influence of past experiences

explained some constraints found in teachers' language teaching approaches. Additionally, I found there were no spaces for reflections on biliteracy learning and the dissimilar linguistic structures of both languages, which hindered the gradual improvement of teaching practices. On the contrary, some strengths of biliteracy practices were Indigenous language teachers' capability to transform their own experiences of discrimination to build nurturing learning environments, and their profound commitment to language maintenance, cultural knowledge, and student growth. The implementational spaces created by the co-design process showed potential to continue an interdisciplinary process of learning from action and reflection, to contribute, through teacher education, to the broader social goal of language revitalization. In this chapter, I discuss the implications of this dissertation's findings for research and educational practice.

Discussion and Implications
Biliteracy in Indigenous Contexts

The continua of biliteracy framework provided a useful analytical lens to access the experience of Indigenous language teachers and preservice students in their joint efforts to develop biliteracy competency in two teacher education programs. I have framed this chapter following the four biliteracy continua to discuss my findings and claims and argue for subsequent research and practice efforts.

The Context Continuum: The Learning Environments Where Biliteracy Occurred

The national and state level contexts of prejudice, discrimination, and Spanish dominant monolingual ideology remained the background where intercultural bilingual education policy was initiated and continues. Against this backdrop, teacher training colleges are significant nodes condensing expertise, history, and biliterate actors. However, within these colleges, learning the Indigenous language was observed as a semiperipheral goal of the educational community. Literacy and biliteracy practices that supported language maintenance goals were, therefore, also

put in second place. Indigenous language teachers were restrained in their spheres of action by the operation of discrimination within and outside these colleges. In serving their Indigenous preservice students, teachers had to ensure Indigenous students' success through the educational experience which in turn required, on occasion, to perform the role of agents of Western schooling. Biliteracy practices were shaped by the need to teach *school teachers literacy practices*, with the authoritative use of blackboard writing, and *translation practices* to perform Indigeneity in the schools.

In my unit of analysis, the Indigenous language classes, Qom language teachers were the exemplification of biliterate individuals. The range of linguistic, literacy, and intercultural abilities they displayed should continue to be researched. When witnessing their life stories and the interplay between adversity, opportunities, agency, and resilience, which characterized the first wave of Indigenous people who successfully navigated higher education settings, Indigenous language teachers' achievements demanded nothing but respectful admiration. Given the dominant monolingual model in which these teachers entered schooling, which also influenced their teacher education, I concluded that Qom language teachers have become biliterate principally by their efforts and less by formal instruction in bilingualism or biliteracy.

This self-taught strategy coupled with a lack of research on biliteracy trajectories and on the specificities of teaching Qom language as a second language to adults explained how teachers over-rely on their students' motivation, initiative, and autonomous study to significantly advance the knowledge of the language to achieve a conversational level.

The six biliteracy practices identified made visible Indigenous language educators' multiple roles as cultural transmitters, self-made linguists, Indigenous pedagogues, and community leaders. Through these practices, teachers established close bonds with students and

opened their life experiences and knowledge to their benefit. The guiding criterion to their teaching labor was the measure to which it nurtured Qom identity and culture, holding at the same time the belief that access to the formal educational system was a necessary step to serve Indigenous communities. This led to a tension between Indigenous empowerment and pervading school and educational system practices which produced a subalternized incorporation of the Indigenous subject. Thus, in the process of facing multiple challenges, the priority of socializing their students as future teachers meant the language learning goals were adjusted to what has been possible to achieve in current conditions, coding and decoding, basic vocabulary, greetings, and short class management instructions.

For Indigenous communities, traditionally oral societies, the recent—in terms of decades—and imposed introduction of literacy, an alphabet for evangelization purposes, created a complicated relationship with literacy. As a tool of colonialism and domination, technologies of the written word were reserved for criollos and used to deceive and deprive Indigenous peoples of their rights. As the findings showed, even in these circumstances, Indigenous teachers found ways to re-appropriate literacy to resist and nurture Indigenous identity.

Literacy practices have remained mostly in the religious community domain, later the schools implementing intercultural bilingual education, then teacher training colleges, and recently they have irradiated to emergent use of new digital media. While there were many relevant Indigenous ways of generating, gathering, and sharing knowledge beyond print-based literacy—expansive definitions of literacy—, there was also an acknowledgment of the need to have ownership of this technology of the language and to use it to contribute to Indigenous communities' wellbeing. This means that, currently, teacher training colleges are privileged spaces to develop and maintain literacy and biliteracy practices aligned with Indigenous cultures.

In this light, biliteracy practices in teacher training colleges are strategic and pivotal to generating and/or strengthening a community of readers and writers of Indigenous languages.

During this study, I asked and engaged in conversations about the meaning of learning to read and write in Qom or Wichí, and more broadly about the future of Indigenous languages. As shared in previous chapters, there is no certainty about actions to change linguistic retraction trends. There is a shared sentiment of historical responsibility as this generation of Indigenous youth and children are less isolated and permeable to influences from broader society at the national and global level, which open avenues for accelerated inculturation but also opportunities to leverage global discourses and resources for Indigenous communities' rights and wellbeing. In their discourses, Indigenous individuals, and communities visualized literacy, biliteracy, and multiliteracy as powerful instruments to exercise agency in this respect.

The Development Continuum: How Biliteracy Was Developed

As Chapter 5 showed, students arrived at the teacher training colleges with weak literacy abilities in Spanish. Multiple factors influence this outcome. The combination of traditional schooling, based on fragmented information memorization, and a monolingual model that separates the spheres of Spanish and Indigenous languages is not ideal for biliteracy development. Additionally, Qom preservice teachers' sociolinguistic reality has changed with Spanish becoming predominant even in Indigenous rural communities (Romero, 2020), therefore, teaching has to be thought of as a series of strategies to teach Qom as a second language and to develop preservice teachers' ability to be responsive to the variety of students' sociolinguistic conditions in their future classrooms, including teaching Qom as a second language at schools.

However, it is important to notice that Indigenous preservice students were skillful in finding spaces for their voices to be heard. Therefore, literacy skills development could become more meaningful when connected to the aspirations and needs of Indigenous students. Indigenous preservice students were extremely self-motivated individuals, with demonstrated ability to self-organize. Additionally, students' orientation to relationships was a strength to be considered in the design of reading comprehension approaches.

There is a potential research and practitioner's agenda to learn more about biliteracy trajectories, biliteracy assessment, and biliteracy teaching strategies. Whereas there is a recognition biliteracy is a social practice, it should not be overlooked that it also includes cognitive abilities and skills to master, which are one of several dimensions of meaningful and integral approaches to teaching and learning literacy. The current biliteracy trajectory delineated by Indigenous language teachers and the modest goals achieved could be expanded by certain initiatives such as administrative arrangements that free time for Indigenous language teachers to collaborate and reflect on their teaching strategies, materials, assessment, and learners; the creation of networks of teachers and Indigenous communities to learn from their experiences; and partnerships with researchers.

Currently, Qom is highly fenced within these tertiary institutions, as an extension of the discrimination Indigenous languages have suffered, as a consequence of linguistic retraction, but also as an effect of the lack of cohesiveness in teaching and learning strategies for language and literacy learning. Spanish language learning and Qom language learning are perceived and act as completely independent realms of thought and action. Responses to this situation would demand some shared thinking and planning between Spanish and Qom language teachers to find synergies. There is a need for an integrated understanding of individuals and communities using

two—or more—languages, and the interrelated ways language learning occurs and affects each other. This is a very complex task, given the way that teacher training colleges replicate racial and linguistic discrimination, also due to criollo teachers' lack of preparation in biliteracy topics. As this same study showed, breaking the inertia that has siloed Spanish and Indigenous language teachers requires deliberate strategies and time.

The Media Continuum: How Biliteracy Is Promoted

The biliteracy practices described showed enormous potential to nurture Qom identity and to bridge traditional oral practices with new literacy practices. At the same time, information gathered through Spanish literacy assessment instruments and Qom language placement tests plus qualitative appreciations of growth, showed progress was minimal during an academic year. The media continuum contains three subcontinua, two of which were very relevant to understanding how teachers were promoting biliteracy and how their efforts could be heightened: the divergent-convergent scripts and the dissimilar-similar linguistic structures of the language.

In terms of scripts (i.e., the type of alphabet or written system used by a language) Spanish and Qom (and Wichí) share the same Latin alphabet. However, analysis of classroom observations showed that this similarity was obscuring the complexity of the learning process. Particularly, knowledge about the phonological systems of each language, the characteristics of two systems of phoneme-grapheme correspondence, and the metalinguistic abilities displayed in comparing, contrasting, and using a similar alphabet for two different languages was not addressed sufficiently, not so much as disciplinary content—although some of it is necessary— but as a reflective practice. In this way, creative and meaningful biliteracy practices developed by Indigenous teachers, such as *breathing life to Qom lataq*, could be complemented with selected and relevant knowledge and exercises.

In terms of the structures of the language, more attention needs to be paid to the dissimilar linguistic structures. As stated, while Spanish is a fusional language, Qom and most Indigenous languages are agglutinative. This difference has several implications for how to approach teaching which have remained unexplored. At the same time, I am not making a defense of an approach to learning Qom as a linguist would do it, but rather to use some tools from Linguistics to develop more strategic ways of accessing grammatical knowledge in service of communicating in that language. There is also the possibility of reaching out to other successful Indigenous language revitalization programs and learning from their teaching approaches when facing this feature of Indigenous languages.

Connected to linguistic features of the language, the issue of dialectal varieties, common to many Indigenous languages, must also be addressed. As the study showed, the treatment of dialectal variety is positively or negatively framed, depending on teachers' treatment of it. There were multiple examples of how dialectal varieties should be respected as markers of identity, and Indigenous teachers' role should be to be responsive to these varieties in the classroom. However, to avoid a negative framing of this topic, from a propositive stance, Qom language teachers could engage in cultivating the development of dialectal intelligibility ability through their courses, as some of their activities show. The goal of dialectal intelligibility could become more explicit and be informed by proven strategies and research.

The Content Continuum: The Knowledges and Texts Used to Advance Biliteracy

The desire to develop original materials was and remains a valuable entry point for collaboration among Indigenous teachers and between Indigenous teachers and researchers. While the educational policy tends to privilege standardized materials and a core textbook for all students, Indigenous teachers placed importance on developing pedagogical materials respectful

of dialectal variety. Also, teachers used and thought of materials in flexible and non-linear ways, as they privileged their ability to be responsive to each cohort's interests and predispositions. The identified design principles, coupled with the potentialities of careful and reflective use of digital technologies, could open creative space to advance in cycles of development, dissemination, and refinement of language teaching materials. One of the most important aspects of this task would be Indigenous teachers' ownership of this process, including technical and project management knowledge.

Indigenous Methodology

Indigenous research methods enhanced our understanding of how to move in the direction of horizontal and collaborative knowledge generation. Five valuable experiences were: giving back interview transcripts and selected video-recorded classes to the teachers, sharing preliminary analysis with Indigenous teachers, conducting an all-Indigenous language workshop, developing an Indigenous-inspired authorship protocol, and having an all-Indigenous research team reflecting monthly on the research and the relationships being built. Overall, there is still a road ahead for Indigenous research methods implementation that achieves knowledge generation useful to theorize about how the world *is* and how to *transform* the world toward Indigenous communities' own goals.

There is much to systematize about the sensibilities, orientations, stances which could characterize respectful and empowering work in Indigenous contexts. There is much to learn about intergenerational collaboration and the ways that urban and rural Indigenous, teachers and the eager learners of Indigenous languages, Indigenous who had access to higher education and those that did not, and Indigenous and non-Indigenous individuals, could work together.

Final Thoughts: What Can Be Expected of Research-to-Practice Partnership in Indigenous Contexts

DBR proved to be practical, meaningful, and relevant. DBR and connected collaborative approaches face similar challenges. Establishing trust, clarifying the criteria for collaboration, and the range of co-design that will take place is only achieved with time and dialogue. The relationship is tested, particularly how it navigates allegiances towards non-Indigenous sources of authority (e.g., administrators, academics, political figures) when working with Indigenous teachers.

However, the DBR approach—or similar collaborative research approaches—grounded in Indigenous research methodologies is a promising mode of operation to generate knowledge requested by the urgent demands of language revitalization, which also makes use and contributes to research and practice on multilingual context in the global sphere. Its responsiveness to naturalistic settings, adaptation to resources available, and orientation toward abstracting learnings or design principles proved a valuable framework in this context. Moreover, the establishment of cycles of iteration, centered on a learning question, experiment, or artifact design, based on collective reflection of the experience is a valuable way to help teams work together.

The Road Ahead: A Research Agenda

This dissertation raised several questions that merit further inquiry. First, there is an important line of inquiry for practitioners and educational researchers to document and theorize biliteracy trajectories, biliteracy assessment, and biliteracy teaching strategies, specifically in national dominant/Indigenous languages contexts. This requires attending to literacy as a social practice but also as cognitive activity, the transcontextual nature of this technology of the language, and how it inserts Indigenous people in global spaces. However, this must be explored

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imbued with Indigenous methodological approaches that adequately address intercultural relationships.

Second, development of biliterate individuals and communities require a better understanding of how different actors (i.e., Spanish and Indigenous language teachers) could collaborate to create and maintain the biliteracy space and actors. The challenge is what type of settings, interactions, norms help transform ossified prejudice and condescending attitudes toward Indigenous individuals, communities, and knowledges, to generate genuine partnerships in teacher training colleges.

Third, based on an interdisciplinary approach, there is a need to systematically explore how agglutinative languages are more effectively taught, prioritizing what has already been learned by the biliteracy practices developed by Indigenous language teachers, namely that the criteria to assess teaching approaches is how they positively contribute to Indigenous identity. This includes questions about how dialectal intelligibility is achieved.

Finally, an avenue of research to continue to explore is how to make explicit what aspects of the DBR model and collaborative partnerships, principles, attitudes, and mechanisms, contribute to horizontal relationships and co-construction of knowledge, particularly in Indigenous contexts.

In the introductory Chapter I presented the concept of Indigenous futurities, as the capacity to act today creating the world one is envisioning. As an act of prefigurative politics, the actions of today must remain coherent with the values inspiring the visions of tomorrow. Linguist Roche (2020) wrote: "Language revitalization is prefigurative in that it restores languages to a community and the world before broad-scale transformation has taken place, as a model of how the world could and should be." I have a different historical perspective, as the

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broad-scale transformations Indigenous communities and all communities are facing, need

responses that have never been thought. However, solutions to the global and profound nature of

today's challenges requires access to the reservoir of all communities' values, stories,

knowledges, creativity, spiritual strength, to be analyzed critically and combine in new ways that

transcend obsolete conceptualization of us versus them, superiority or inferiority, and domination

as the only and main source of power. In Indigenous contexts, biliteracy is prefigurative,

imagining a world where Indigenous people cultivate—through their language and literacy—the

beauty of Indigenous ways to see, make meaning, and be in the world while fully participating—

through a common language and literacy—in the national and global spheres to contribute their

share of theory and practice to find responses to humanities' pressing global challenges.

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Appendix A – Maps

**Intercultural Bilingual Education schools and Teacher Education Institutes
in the province of Chaco, Argentina**
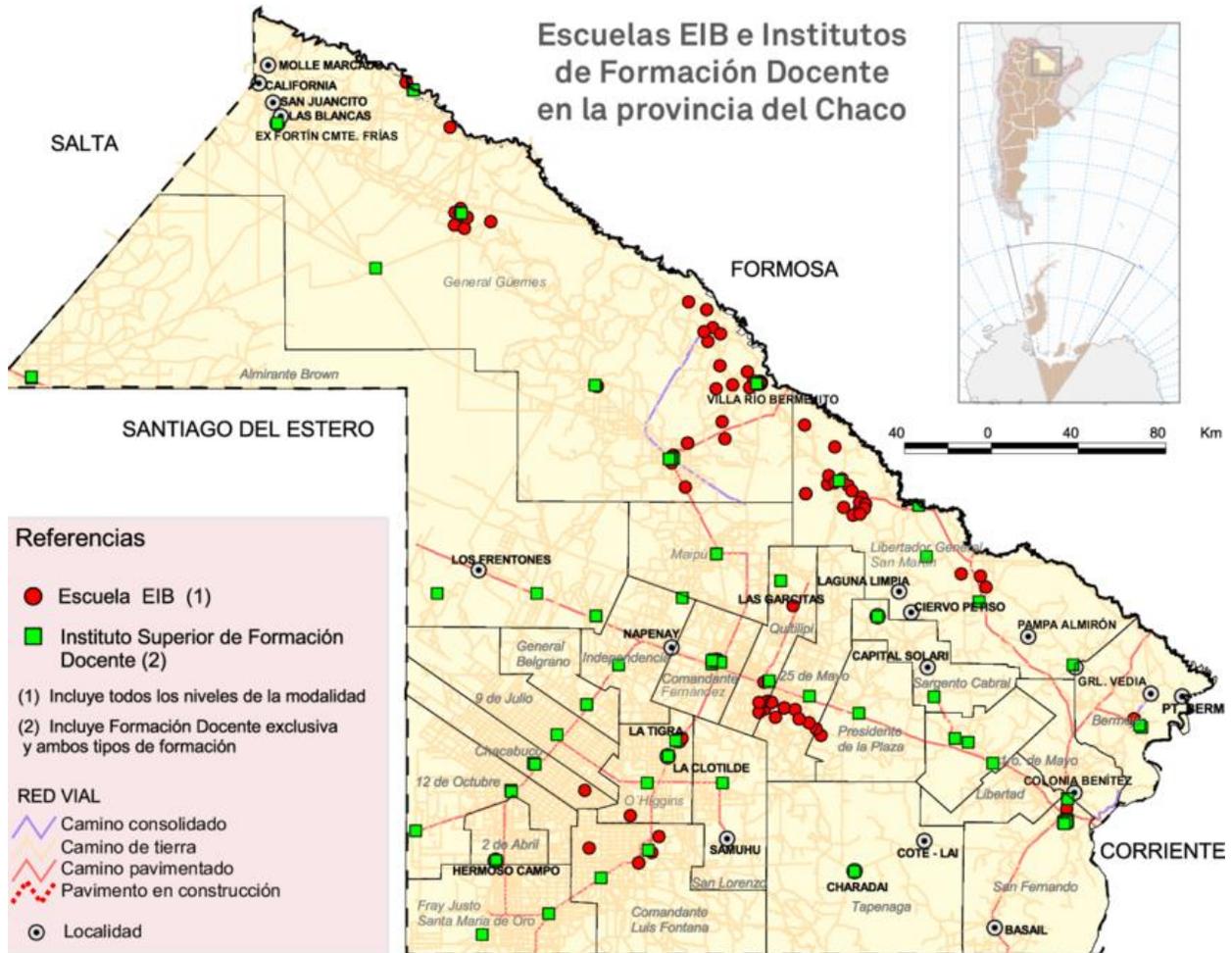
Note. Map of Chaco province, northeast of Argentina. Intercultural Bilingual Schools (EIB) red dots and Teacher Education Institutes green square (Hecht & Zidarich, 2016, p. 18).

Map of Qom and Wichí territory and dialectal varieties

Referencias:

- Qom
- Wichí
- Límite Internacional
- Tacshec
- Bermejeño
- No´olxanaxaq
- Pilcomayeño
- Piguem
- L´anagashec
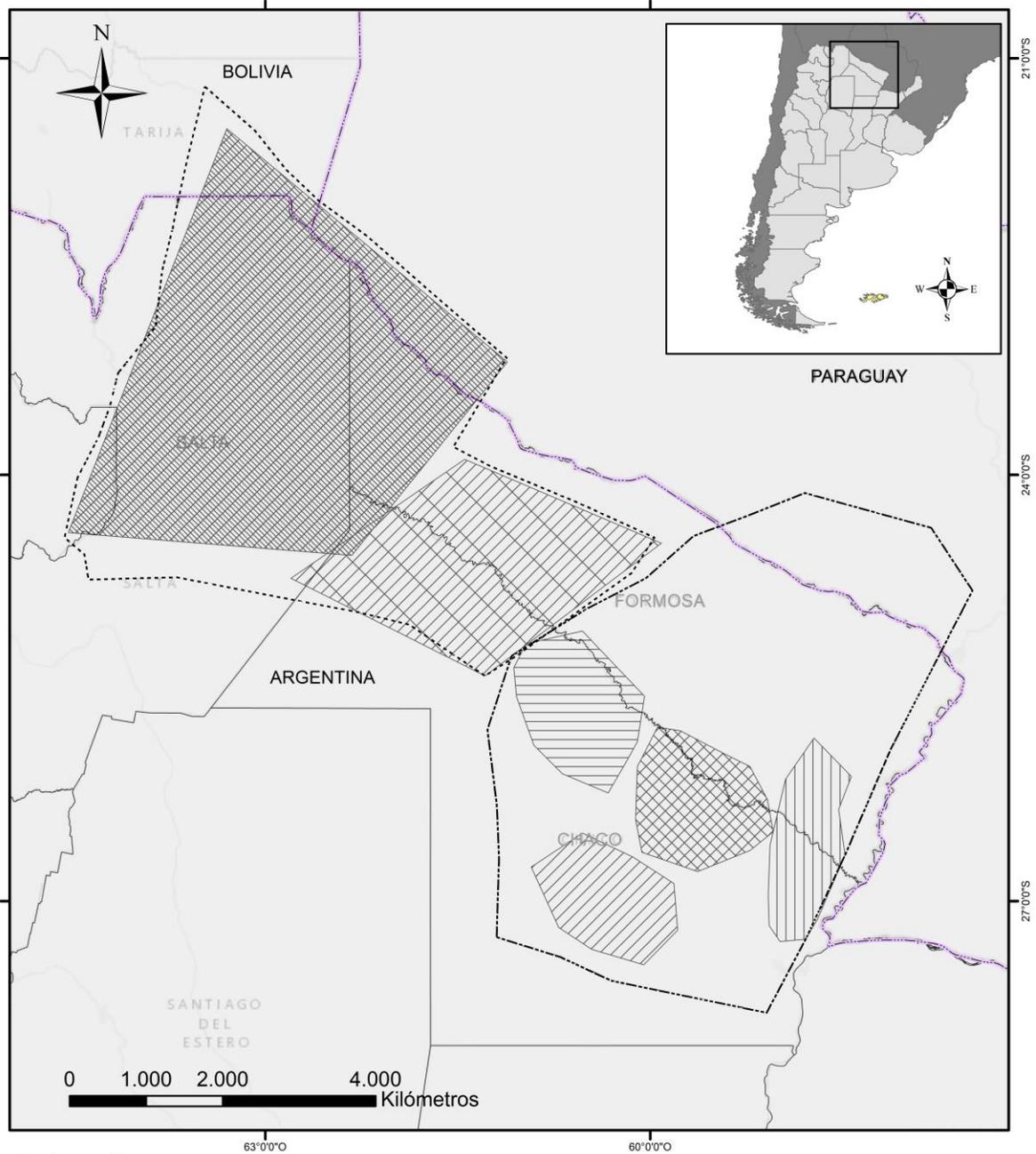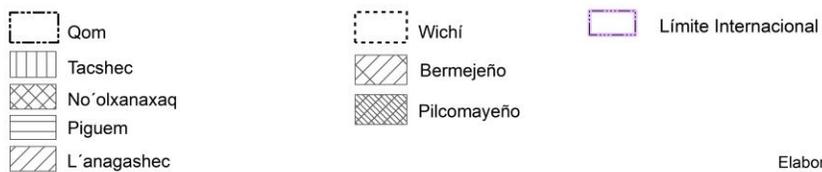
Elaborado por: Maximiliano Alfredo Fernandez 2023

Elaborated by the research team based on Messineo (n.d.), & Necersian (2020).

Appendix B – Protocols

Storytelling interviews

Topic	Question	Additional questions
Introduction	1. Who are you? Where do you come from? Who is your family? 2. Which is one of your favorite (Wichí/Qom) stories?*	What is the creation story of your community? Who shared it with you?*
Teacher educator trajectory	3. How did you decide to become a teacher? And a teacher educator? 4. How was your experience in school? What did you like or enjoy from school? What was challenging? 5. What was it like for you when you started to study to be a teacher? 6. How do you want to provide a similar or different experience to your students (Indigenous preservice teachers)?	Can you think of a time when your language and identity were addressed at school?
Biliteracy	7. Tell me your story of reading and writing. 8. What type of activities help students learn reading and writing in (Spanish/Qom/Wichí)? 9. What are some of the biggest challenges in teaching reading and writing in (Spanish/Qom/Wichí)? 10. How does being bilingual affect your students' (Indigenous preservice teachers) learning?	What is your happiest memory of learning to read and write? Which one is the most difficult memory? In what language did you learn to read and write?
Teaching literacy	11. How do you teach the language? 12. How do you teach literacy (reading and writing)?	
Futurities	13. How is reading/writing used in your community today? 14. How does Qom/Wichí connect the past, present, and future?* 15. How does the knowledge of reading and writing in Spanish and Qom/Wichí help Indigenous communities' goals?	How does Qom/Wichí literacy (reading and writing) connect with our spiritual life?*

Note. *Questions not asked to criollos teacher educators. Storytelling interview questions sections Introduction and Futurities are adapted from Iseke (2013, pp. 562–563).

Students' focus group

Topic	Question	Additional questions
Introduction	1. Who are you? Where do you come from? Who is your family? 2. Which is one of your favorite (Wichí/Qom) stories?*	What is the creation story of your community? Who shared it with you?*
Teacher educator trajectory	3. How did you decide to become a teacher? And a teacher educator? 4. How was your experience in school? What did you like or enjoy from school? What was challenging? 5. What was it like for you when you started to study to be a teacher? 6. How do you want to provide a similar or different experience to your students (Indigenous preservice teachers)?	Can you think of a time when your language and identity were addressed at school?

Topic	Question	Additional questions
Indigenous language learning	In the context of this study/academic year: 1. What have you learned? 2. What topics have been you reflection about? 3. What has helped you in your efforts to learn Qom/Wichí? 4. What obstacles have you identified to learn Qom/Wichí? 5. What suggestions do you have to keep learning Qom?	

Spanish reading comprehension test for preservice teachers

<table>
<tr><td colspan="2" align="center">Ejercicio de lectura</td></tr>
<tr><td>Institución en la que estudia:
Localidad:
Año/Semestre que está cursando:
Carrera:
Año en que finalizó los estudios secundarios:</td><td>Nombre:
Edad:
Fecha:
Hora de inicio:
Hora de finalización:</td></tr>
</table>

¿Qué es el constructivismo?

1. El concepto de constructivismo tiene multiplicidad de acepciones y connotaciones en Ciencias Sociales y Filosofía. Más que entrar en grandes discusiones filosóficas, acotaremos su tratamiento a un ámbito muy preciso: el de la Psicología y la Educación. Aún más, dentro de la Psicología, queremos restringirnos a tres corrientes que nos parecen las más influyentes en el discurso educativo. Permítasenos aventurar lo que nos parece que son las características esenciales a toda posición constructivista.

2. Primero: toda posición constructivista rescata al sujeto cognitivo, lo que es un asunto muy importante a tener en cuenta, porque le constructivismo surge como oposición a concepciones conductistas e innatistas, cuya premisa más básica es que el sujeto cognitivo es inexistente, mientras lo que pretende defender el constructivismo es que, en realidad, el sujeto es un "constructor" activo de sus estructuras de conocimiento.

3. El "rescate" del sujeto cognitivo nos remita a la cuestión de la especial relación que existe entre sujeto y estímulo en toda posición constructivista. En las posiciones epistemológicas más clásicas dentro de la psicología, la relación entre el sujeto y el estímulo es absolutamente reactiva. O sea, el sujeto, más que un "sujeto", es un mero receptáculo de las influencias del medio. Nos gustaría adelantar que el concepto de construcción es clave aquí para entender las distintas posiciones. Si bien es cierto que toda posición constructivista rescata el rol constructivo del sujeto, las diferencias radican en cómo se da esa construcción dentro del espacio cognitivo.

4. Segundo: a toda posición constructivista en Psicología le subyace, como piedra angular, un determinado concepto de desarrollo. Esto porque en toda posición constructivista se hace un tratamiento explícito de la evolución de un estado cognitivo a otro estado cognitivo. En suma, se trata de explicar la "construcción" de ciertas estructuras a partir de otras que son distintas.

5. Las diferencias observadas entre los autores constructivistas son, sin embargo, muy importantes. Por ejemplo, en Piaget el foco está en la consideración del desarrollo de estructuras psicológicas en el niño, el foco de Vygotsky en la historia de la cultura y el de Maturana en la evolución de la especie humana.

6. Tercero: toda posición constructivista tiene un marcado interés por asuntos epistemológicos. A consecuencia de los dos aspectos reseñados antes, resulta ineludible aclarar preguntas tales como ¿quién conoce?, ¿cómo conoce?, ¿qué conoce? y ¿qué es conocer? Este interés resulta inevitable, si se tiene en cuenta que el objeto de estudio es la construcción, desarrollo y cambio de conocimiento.

Adaptado de Rosas, R. y C. Sebastián. *Piaget, Vygotsky y Maturana. Constructivismo a tres voces*. Buenos Aires: Aique, 2001.

Responder las siguientes consignas

1. Nombre dos figuras destacadas en cada una de las siguientes áreas:
   Educación:
   Filosofía:
   Historia:

2. ¿Cuáles son las tres corrientes del constructivismo a las que se refiere el autor?

3. Sintetice las características fundamentales del constructivismo.

4. Ubique las siguientes expresiones en el texto y explique qué significan:
   - sujeto cognitivo:
   - rol constructivo del sujeto:
   - asuntos epistemológicos:

5. ¿En qué área del conocimiento se centra el autor?

6. Indique si las afirmaciones son correctas o incorrectas, según el texto.

   -Los enfoques innatistas surgen en oposición a las posturas constructivistas.
       correcto
       incorrecto
   -Según el conductismo, la relación entre el sujeto y el estímulo es reactiva.
       correcto
       incorrecto
   -Los autores mencionados explican de manera diferente el concepto de construcción.
       correcto
       incorrecto

a) Este texto le resultó:
   - muy fácil de comprender
   - fácil de comprender
   - normal
   - difícil de comprender
   - muy difícil de comprender

b) El párrafo que le resultó más fácil fue el N° _____

Explique por qué: _____

_____

c) El párrafo que le resultó más difícil fue el N° _____

Explique por qué: _____

_____

d) ¿Qué preguntas le haría al docente para comprender mejor el texto?

   - _____
     _____

   - _____
     _____

   - _____
     _____

Note. Reading comprehension test by Arnoux et al (2007, pp. 93–94).

Criteria/scoring guide

Item	Ability assessed	Criteria/scoring guide
Part 1: Prior knowledge		
1	Prior knowledge	Two thinkers associated with each discipline (1 point).
Part 2: Reading comprehension		
2	Inference, connects different parts of the text	Identifies the three approaches: Piaget, Vygotsky and Maturana (1 point).
3	Macro-structure construction: reformulation of global content through hierarchization of ideas and selection (or construction) of key ideas communicated in a written summary	Correct answers: - Mentions the three characteristics highlighted in the text - Concepts presented in the original text are described maintaining meaning - Use their own words and phrases (transcend copy of phrases) - Phrases are grammatically correct - Phrases are part of a cohesive paragraph or if they are an enumeration have a clear context - Complete and autonomous (understanding is independent of reading the instruction) Incorrect answers: - Conceptual distortion, omission, or secondary characteristic mentioned - Fragmented comprehension - Copied phrases Benchmark: 7.0% no answer, 16.5% correct answers, and 76.5% unsatisfactory answers (Arnoux et al., 2006a) (1 point).
4	Build and explain abstract concepts from the text	Correct answers: - Identifies a segment of the text that provides a definition and reformulates the phrases with minimum variation (syntactic transformation, expansion, addition, omission) - Integrates several characteristics of the concept found in more than one segment of the text - Adequately connects previous knowledge with the concept defined in the text Incorrect answers: - Lexical knowledge not connected to the text (previous and non-disciplinary knowledge of words) - Incomplete, partial recuperation of one mention of the term - Distortion of meaning (copy or inadequate paraphrasis) Benchmark: 7.0% no answer, 30% correct answers, and 63% unsatisfactory answers (Arnoux et al., 2006b) (1 point).
5	Low inference	Psychology (1 point).
6	Inferences	Incorrect Correct Correct Benchmark part 1: average 5.04 points (Arnoux et al., 2007) (1 point).

Part 3: Metacomprehension Abilities

a	Reading metacomprehension abilities	Self-assessment of level of difficulty, text level
		Benchmark: 18% no answer, 74% very easy + easy + normal, 7,5% difficult + very difficult (1 point).
b	Identify easiest paragraph and reason	Self-assessment of level of difficulty, paragraph level
		Benchmark: 58% no responses or incomplete answers (no answer, answer but no explanation, unspecific answer) (1 point).
c	Identify easiest paragraph and reason	Self-assessment of level of difficulty, paragraph level
		Benchmark: 58% no responses or incomplete answers (1 point).
d	Reading comprehension question making	Desired types of questions: amplification question, literal question.
		Unsatisfactory types of questions: unspecified clarification question, unanswerable question, question about formal aspects of the text, task instruction.
		Benchmark: 55% no answer, 20% one question, 12% two questions, 13% three or four questions (Arnoux et al., 2007).
	Reading metacomprehension abilities	Low ability:
		• No answer item a)
		• Answer 'very easy', 'easy' or 'normal' and 3 points or less in Part 1 of test
		• 3 points or less in Part 1 of the test and one or more unanswered questions (a, b, c, d)
		Benchmark: 54% low ability/46% medium or high ability (Arnoux et al., 2007) (1 point).

Note. Table developed based on Arnoux et al. (2006b, 2006a, 2007) and personal communication Noguera, 2023.

Observation Protocol

I. Identification

Research site:	Course:	Teacher:
Topic:	Number of students present:	
Date:	Time: Begins at	Ends at

II. Physical setting/demographic

An annotated visual representation (drawing) of the classroom setting (resources, sitting arrangements) and group demographic (men/women, information volunteered about languages spoken).

III. Class observation

A description of the class, with a focus on biliteracy actors (A), events (E), sites (S), and practices (P).

Time	Activities/Interactions (descriptive)	Comments (reflective)
Before class (15 minutes)		
8:45		
8:50		
8:55		

During class		
9:00		
9:10		
After class (15 minutes)		

IV. Notes

a. Artifacts collected for this class (pictures of blackboard, written text produced, examples of worksheets, etc.)

b. Notes on the video/audio recording of the class (include file name).

c. General and special conditions surrounding the observation (interaction of researcher with faculty, students).

d. Observations (emotional states of teacher educator, Indigenous preservice teachers, researcher, rapport, distances).

e. Any suggestions to modify the observation protocol.

Appendix C – Codebooks

Biliteracy Codebook

Code	Definition
1. Qom	
1.1. Teaching acechedario	Instances of teaching, presenting, explaining, or asking questions about the Qom alphabet
1.2. Words	Teaching, learning, or discussing Qom words
1.3. Dialectal varieties	Mentions of dialectal varieties, examples, and theorization
1.4. Pronunciation	Instruction, explanations, questions about Qom pronunciation
2. Spanish	Any mentions to Spanish language: learning, teaching, difficulty, characteristics
3. Bilingualism	Any mentions to ideas about knowing two languages, comparison of two languages, theories and beliefs about two languages
3.1. Translation	Descriptions of translation, examples of translation
4. Reading	Ideas about learning or teaching reading (in Qom or Spanish). Reading includes decoding, fluency, reading comprehension, reader identity, books, reading materials, reading practices, and reading culture
5. Writing	Ideas about learning or teaching writing (in Qom or Spanish). Writing defined as coding -using letters-, producing original written text, uses of writing, writers' identity, types of written text, writing practices, and writing culture
6. Learning	Beliefs and practices of learning in general -all except reading and writing
6.1. Criollos learning Qom	Mentions of criollos learning Qom
7. Teaching	Beliefs and practices of teaching, in general -all except reading and writing
8. Ownership	Sense of ownership, of language, teaching, Teacher Training College, land, family

Biliteracy Practices Codebook for Video

Classroom observations are segmented based on changes in the learning or literacy activity of the text at the center of the activity. Segments are selected if they use both languages and use print (excluded: use of only one language, not connected to print-based text).

Code	Definition	Subcodes
Text		
Description of text	Open coding	
Text #	Number each text read/written during the class in correlative order	
Textual form	Refers to the text genre and presentation. Examples: greeting card, news story, recipe, application form, etc. In this study one specific text is prevalent LIT: literacy instruction text. When other types of text are mentioned, they are included.	LIT1, copy text, notebook LIT2, instructional text, textbook LIT3, book, dictionary LIT4, chart LIT5, blackboard 6. App to learn Qom 7. Academic text 8. WhatsApp message 9. Attendance record
Communicative Function	Refers to the agent's communicative intent for reading or writing a text	1. Teach the alphabet 2. Practice decoding 3. Practice reading 4. Access cultural knowledge 5. Teach words 6. Teach grammar 7. Teach phrases 8. Out-of-school goal
Social Purpose	Refers to the social goal accomplished by the literacy practice. In this study, most of them are connected to formal schooling experience (take notes, assessment, complete homework as proof of learning). When other purpose is explicit, it is included.	
Activity		
Agent	The person initiating or leading the literacy event: teacher, individual student, collective student.	1. Teacher 2. Student, individual 3. Student, all 4. Other
Literacy Activity	Characterizes how the printed text is being read, written, or discussed.	1. Read aloud individually 2. Read aloud collectively (chorus) 3. Read silently 4. Decoding 5. Copying text 6. Taking dictation 7. Producing text individually 8. Producing text collectively 9. Discussing: questions & answers 10. Explaining elements of literary culture (use of libraries, digital texts, etc.)
Learning Activity	Open coding. Its purpose is to characterize the type of learning activity the student engages in. For example, how active/passive might be, or if its cognitive demand is lower -such as copying text- or higher -such as producing original text or making a comparison-.	

Biliteracy		
	Describes the interaction between the two languages. Following the dimensions of content and development within the continua of biliteracy framework of content and development.	
Content		
	Qom or Wichí as content of instruction	Content of instruction
	Qom or Wichí as medium of instruction or mode of communication	Medium of instruction
	Refers to local knowledge	Contextualized
	Refers to broader or more general knowledge	Decontextualized
Translation	Translation exercise	
Development	From the perspective of the student:	
	Receptive	Listening, reading
	Productive	Talking, writing
	Oral skills	Listening, Talking
	Written skills	Reading, writing

Appendix D – Qom and Spanish

Spanish and Qom phonological systems

The following tables summarize key features of Spanish -in the variety spoken in Chaco- and Qom -in the varieties spoken in the same state-. The table present the phonological system of both languages, separated by consonant and vowel phonemes, highlighting in light gray phonemes only present in Spanish, and in dark grey phonemes only present in Qom. Not shaded phonemes are shared between the two languages. This table represents the phoneme-grapheme correspondence system of both languages and their relationships, in other words, the implicit knowledge that a fluent bilingual Spanish/Qom possesses.

Table D.1.
Spanish and Qom phonological systems

Manner \ Articulation Point	labial	dental	palatal	velar	uvular	glottal
Consonants						
plosive	p b	t d		k g	q ɢ ʔ	
fricative	f	s	ʃ ʝ ʒ	x		h
affricate			t͡ʃ			
Nasal	m	n	ɲ			
Lateral			l	ʎ		
Trill		r				
tap or flap		ɾ				
semi-consonants	w		j			

	front	central	back
Vowels			
Close	i		u
Mid	e		o
Open		a	

Note. In light gray phonemes exclusive to Spanish. In dark gray phonemes exclusive to Qom.
Consonants to the right in the cell are voiced, and to the left are voiceless. All symbols are from the International Phonetic Alphabet.

The Spanish phonological system spoken in Northern Argentina has 23 phonemes, comprising 18 consonants and 5 vowels:
- /ʎ/ is becoming less used widely but in this region, speakers mark a difference between *calló* /kaʎó/ 'silent', and *cayó* /caʝó/ 'he fell'
- /ʝ/ as pronounced in this variety, e.g., cayó, /caʝó/
- Does not include /ʒ/ spoken in Buenos Aires. Speakers from the capital city would pronounce both words *calló* and *cayó* the same /caʒó/
- To listen to the phonemes of Spanish you can consult this website https://soundsofspeech.uiowa.edu/ (University of Iowa, n.d.)

(Adapted from Cayre Baito, 2017, p. 32; Hualde & Colina, 2014, p. 40).

The Qom phonological system of the dialectal varieties spoken in Chaco has 24 phonemes, comprising 20 consonants and 4 vowels:

- In Qom the phonemes /d/ and /r/ are two realizations of the same phoneme (allophones). Which one is used depends on the individual or regional varieties. However, the tendency is for the phoneme /r/ to be replacing /d/ (Messineo, 2001 cited in Hachén, 2007).
- In some varieties phoneme /w/ is pronounced /β/ (Hachén, 2007).

(Based on González, 2015; Hachén, 2007; Messineo, 2011; Messineo & Dell'Arciprete, 2005; Sánchez, 2009, 2019)

Table D.2.
Spanish and Qom phoneme-grapheme correspondence systems

Spanish and Qom phoneme-grapheme correspondence systems

#	Spanish					Qom				
	Phoneme	Example	Grapheme	Example	Translation	Phoneme	Example	Grapheme	Example	Translation
1	/p/	/pato/	p	pato	duck	/p/	/pe/	p	pe	night
2	/b/	/buro/ /baso/	b v	burro vaso	donkey cup					
3	/t/	/toro/	t	toro	bull	/t/	/ten/	t	ten	¡be careful!
4	/d/	/dedo/	d	dedo	finger	/d/	/dasot/	d	dasot	[he/she] dances
5	/k/	/kasa/	c + /a/ c + /o/ c + /u/	casa	house	/k/	/kalmaik/ /kos/	c + /a/ c + /o/ c + /u/	calmaic cos	ombú[5] pig
		/keso/ /kiosko/	qu + /e/ qu + /i/ k	queso kiosko	cheese kiosk		/mapik/ /wotaike/ /kiʎek/	-c qu + /e/ qu + /i/	mapic huotaique quillec	carob tree[6] [he/she] wants parrot
6	/g/	/gato/	g + /a/ g + /o/ g + /u/	gato	cat	/g/	/ʔlgaca/ /alogo/	g + /a/ g + /o/	ʻolgaxa alogo	hen [his/her] clothes
		/gitara/	gu + /e/ gu + /i/	guitarra	guitar		/pigem/ /wagilot/	gu + /e/ gu + /i/	piguem huaguilot	sky crested caracara[7]
7						/q/	/qapi/ /qoto?/ /qoʎegesaq/	q + /a/ q + /o/ -q	qapi qoto' qolleguesaq	small dove iguana
8						/G/	/nawoGo/	-x-	nauoxo	springtime
9						/ʔ/	/ʔalo/ /soʔotaɲi/ /laʔ/	'	ʻalo soʻotañi laʼ	women [I am] sitting hello

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Table D.2. (cont.)
Spanish and Qom phoneme-grapheme correspondence systems

	Spanish					Qom				
#	Phoneme	Example	Grapheme	Example	Translation	Phoneme	Example	Grapheme	Example	Translation
10	/f/	/flor/	f	flor	flower					
11	/s/	/sol/ /sena/	s, c + /e/ c + /i/	sol cena	sun dinner	/s/	/sol/	s	só	he
		/sapato/	z	zapato	shoe					
12	/j/	/joɣur/	y	yogur	yogurt	/ʃ/	/ʃikait/	sh	shicait	yesterday
13										
14						/ʒ/	/ʒoʔoɢoɲi/	y	yoʔoxoñi	dawn, morning
15	/x/	/xirafa/ /xirasol/	j, g + /e/ g + /i/	jirafa girasol	giraffe sunflower					
		/oaxaka/	x	Oaxaca	Oaxaca					
16						/h/	/hek/	j	jec	[he/she] leaves
17	/t͡ʃ/	/t͡ʃant͡ʃo/	ch	chancho	pig	/t͡ʃ/	/t͡ʃaik/	ch	chaic	palm tree
18	/m/	/mano/	m	mano	hand	/m/	/maɲik/	m	mañic	ostrich
19	/n/	/nido/	n	nido	nest	/n/	/naman/	n	naman	[he/she] likes
20	/ɲ/	/ɲandu/	ñ	ñandu	ostrich	/ɲ/	/ɲaqpiolek/	ñ	ñaqpiolec	children
21	/l/	/let͡ʃe/	l	leche	milk	/l/	/lawa/	l	laua	wing
22	/ʎ/	/ʎabe/	ll	llave	keys	/ʎ/	/ʎik/	ll	llic	path
23	/ɾ/	/madeɾa/	-r- -r	madera	wood					
24	/r/	/pero/	-rr-	perro	dog					

Table D.2. (cont.)
Spanish and Qom phoneme-grapheme correspondence systems

#	Spanish Phoneme	Spanish Example	Spanish Grapheme	Spanish Example	Spanish Translation	Qom Phoneme	Qom Example	Qom Grapheme	Qom Example	Qom Translation
25						/w/	/wakak/	hu + /a/	huacac	breaks
							/wo?o/	hu + /e/	huo'o	is
							/kawa/	hu + /o/	caua	absent [several]
							/nawek/	u + /a/	nauec	small hill
							/pa?awo/	u + /e/	pa'auo	is inside
							/wi?i/	u + /o/	vi'i	year/summer
								v + /i/		
26						/j/	/jalek/	ỹ-	ỹalec	my son
							/sajaten/	-ỹ-	saỹaten	I know
27	/a/	/arbol/	a	árbol	tree	/a/	/alo/	a	alo	ash
28	/e/	/estreʎa/	e	estrella	star	/e/	/ele?/	e	ele'	parrot
29	/i/	/isla/ /i/	i, y	isla, y	island, and	/i/	/ima?/	i	ima	my house
30	/o/	/oso/	o	oso	bear	/o/	/qom/	o	qom	qom
31	/u/	/uɲa/ /pinguino/	u, ü	uña, pingüino	nail, penguin					
	no phoneme	/uebo/	h	huevo	egg					
	/b/ /u/ /gu/	/bagner/ /neuton/ /xaguai/	w	Wagner, Newton, Hawai	Wagner, Newton, Hawai					
	/ks/ /s/	/taksi/ /silofon/	x	taxi, xilofon	taxi, xylophon					
							/qallep/	l-l	qal-le	our fire

Note. All symbols are from the International Phonetic Alphabet and phonemes are represented between slashes. The hyphen indicates when the grapheme is used

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The table is divided in two: Spanish and Qom. The Spanish side of the table represents the 23 phonemes of the Northern Argentinian variety of Spanish and their relationship with the Spanish alphabet. The last three graphemes ⟨h⟩, ⟨w⟩ y ⟨x⟩ -after the dotted line- represent no phoneme, or one or two phonemes already presented in the list of 23 phonemes.

Regarding the Spanish alphabet since 1803, it had 29 letters, including ⟨ch⟩ and ⟨ll⟩. In 2010, following standardized Latin alphabets, ⟨ch⟩ and ⟨ll⟩ were removed for purposes of alphabetic order. Both graphemes are still part of the writing system, but not the alphabet (RAE, 2023). (Adapted from Cayre Baito, 2017; Hualde & Colina, 2014; Salgado, 2000)

The Qom side of the table represents the 24 phonemes of the Qom in the varieties spoken in Chaco and their relationship with the Qom alphabet most used in the same state.

In Qom, /d/ and /r/ are two realizations of the same phoneme (allophones). Two individuals can pronounce: /taxade/ or /taxare/ (Spanish: father) and would mean the same. However, the tendency is for the phoneme /r/ to be replacing /d/ (Messineo, 2001 cited in Hachén, 2007). In this sense, the grapheme ⟨d⟩ could be read as /d/ or /r/ depending on the individual, yet given the influence of Spanish, when writing in Qom sometimes there is a tendency to mark this dialectal variation in writing.

> - In some texts, grapheme ⟨ỹ⟩ is represented ⟨ÿ⟩.
> - One additional feature is the use of the dash to represent the occurrence of the double phoneme /l/ which without the dash, might get confused with ⟨ll⟩ representing phoneme /ʎ/.

(Based on González, 2015; Messineo & Dell'Arciprete, 2005; Sánchez, 2009, 2019)