PROFESSIONAL DEVELOPMENT FOR RURAL TEACHERS IN CHILE: WHAT THEY NEED AND HOW TECHNOLOGY CAN HELP

A Dissertation

by

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ABSTRACT

This study adds to the body of knowledge about professional development for teachers. Professionally well-trained teachers will most likely transfer those skills to their students. Therefore, it is necessary to provide opportunities for teachers to develop and grow professionally according to their professional context and needs. This study focuses on professional development of rural teachers in Chile. These teachers work in schools that present unique characteristics, which demand professional development to be supportive and related to teachers' practices in rural settings.

Through a mixed method study implemented through an online survey and later interviews, rural teachers from Chile were asked about their preferences for topics to learn, the importance of participating in activities based on the adult learner paradigm, their preference for delivery methods, and their expectations of professional development for rural teachers. The study also explores the potential use of online systems and online learning communities, by asking teachers about their perceptions of the usefulness of online systems and the perceived benefits as well as obstacles to their implementation in rural areas.

The findings of this study suggest that rural teachers tend to favor professional development that provides ongoing support for their teaching practices, foster collaboration, and reflection and addresses their rural context and needs. Technology is perceived as a tool to overcome isolation and to collaborate and reflect with peers; however, this study identified the lack or unstable access to Internet as an obstacle to the use of online systems in professional development.

More research is needed to identify the design and learning principles that currently guide professional development for rural teachers. It is also recommended to identify the role of higher education in the integration of technology and education in the training of future teachers. Finally, it is suggested to research about the relationship between current professional development programs for teachers and students learning outcomes in rural areas.

ACKNOWLEDGEMENTS

"Nothing in this world can take the place of persistence. Talent will not: nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education will not: the world is full of educated derelicts. Persistence and determination alone are omnipotent." Calvin Coolidge

And to everyone who has shared a smile with me ☺

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CHAPTER I

INTRODUCTION

Statement of Purpose

This study intends to assess the professional development needs of rural teachers in Chile. The resulting data will be used to aid in the design of effective contextualized professional development resources and activities for teachers. It also seeks to identify potential benefits of, as well as obstacles to, the implementation of online learning communities as a means of enhancing future professional development of teachers. Another purpose of the study is to explore the relationship between the needs assessed and the potential use of online learning communities for teachers. The relationship of demographic aspects of the rural communities to the participants' needs, perceptions, obstacles, and identified benefits will also be investigated.

Brief Statement of the Problem

Researchers have identified the following areas of concern in relation to teachers' professional development: (a) a discrepancy between design of professional development for teachers and the actual needs in the classroom and (b) professional development for teachers is typically not contextualized.

Teachers' professional development theory and practice. Despite the recognized importance of teachers' professional development, teachers often indicate that there is a disconnect between theory and reality, i.e., between what is designed as teachers' professional development and what is actually practiced within educational systems. There are also discrepancies among teachers' professional development programs, which do not offer continuity in attaining or supporting goals, related to the needs and characteristics of the community. Consequently, teachers' professional development programs often fail to provide what Garet, Desimone, Birman and Yoon (2001) identify as "a coherent program of teacher learning and development" (p. 927). The disconnect between teachers' professional development and their needs is particularly relevant in the case of rural teachers. As Mitchem, Wells and Wells (2003) indicated, teachers' professional development in rural schools usually is "not effective in attaining its goals" (p. 1). A possible explanation for such problems in rural schools is the incorporation of teachers' professional development designed in standard national goals, which results in training programs that do not address the needs and challenges found in rural schools, including small numbers of students, multigrade classrooms, and other factors such as the ones mentioned by Mitchem et al. (2003) who list "persistent poverty, pervasive lack of resources, and geographic isolation as essential factors" (p. 1).

Teachers' professional development and school learners' success. The importance of teachers' professional development has been recognized as "a significant element in schools and communities [in gaining] access to the most productive learning environments" (Scott, 2010, p. 20). In particular, teachers' professional development has been shown to positively influence teachers' instructional quality and its subsequent impact on the student-learning outcome. However, teachers' professional development that has not been properly designed does not appear to increase the academic success of students. Cartes and Le-Bert (2003) have reported this in their evaluation of teachers' professional development programs in Chile.

Research and rural educational topics. Decontextualized teachers' professional development typically results from the lack of research into how to make informed decisions about teachers' professional development in rural areas. To that end, Arnold, Newman, Gaddy, and Dean (2005) indicate the need for more research to explore the impact of general policies on rural teachers and to identify the role of higher education in improving the quality of rural teachers. Similarly, it is also necessary to investigate rural teachers' needs, preferences, and the resources available for their professional development implementation. This knowledge is necessary for determining how different resource strategies, such as technology and communication, could ensure positive outcomes through a stronger connection between theory and practice.

Rationale. The concerns reported in the previous section need to be addressed since the role of the teacher and his/her significance in the rural community has been widely acknowledged. Accordingly, Steffy, Wolfe, Pash, and Enz (2001) assert that teachers' actions and knowledge will have the most significant effect on students' academic life. Likewise, in the article "Strategy on Teachers for years 2012-2015" (2012), UNESCO recognizes the need for "qualifying teachers and promoting their professional development and supporting it through diversified strategies including Information Communication and Technology (ICT) " (p. 2). Thus, addressing these needs should be a priority goal for improving education in urban and rural schools.

Background

Since accepted practices and approaches to teaching and learning change over time, teachers' professional development must undergo similar transformations to provide appropriate training that incorporates suitable instructional techniques. Regarding these transformations, strategies based on collaboration as well as adult learning theories are recognized by teachers as suitable approaches as they avoid a passive learner role. Similarly, it has been suggested that professional development for teachers should be designed to address the needs of the participants based on their particular professional contexts such as rural or urban school locations. Currently, teachers' professional development focuses on implementing reforms that follow homogeneous and national agendas (Howley & Chadwick, 2002). While the training initiatives are designed according to national priorities, teaching is practiced locally;

hence, some elements of the local context should be integrated into designing teachers' professional development. This idea is reinforced by UNESCO (2012):

> There is a need to reconsider the current approaches to teacher preparation in order to align institution–based teacher training to classroom requirements and intended curricula to ensure that the daily challenges of professional practices, particularly in precarious situations and contexts with limited resources, large class size, special education needs learners or multigrade teaching, inform teacher training (Strategy on Teachers for 2012-2015, p.7).

An initial contribution to a contextualized design of teachers' professional development would be to incorporate rural teachers' perspectives to determine: (a) what they consider to be effective for their own learning, (b) what content may be more pertinent to their specific needs, and (c) their preferences for the means to teach and deliver that content. Including these perspectives is essential to the process of making decisions about teachers' professional development. In this regard, Mitchen et al. (2003) also emphasize the importance of making decisions based on reliable data since this ensures the appropriate use of resources as well as provides a consistent and coherent plan for professional development and school improvement.

Theoretical Framework

The theoretical approach represented in this study was chosen in relation to Knowles's adult learning theory. As such, this approach supports demands by teachers for a more active role in teachers' professional development through the integration of

teachers' professional context, experiences, and their needs for reflecting, sharing, and collaborating with other teachers.

Teachers as adult learners. Teachers' preferences for a learner-centered professional development are related to their characteristics as adult learners. Knowles, Holton, and Swanson, (2005) defined these adult learning characteristics as follows:

> The learners learn best when:
>
> 1. they know why they should learn the content before beginning the instruction,
> 2. the information to be learned can be directly applied to solving a problem,
> 3. they will use their life experiences as conceptual base to facilitate learning, and
> 4. the educational process occurs in the context of real-life situations (p. 159).

These characteristics determine the guiding principles for designing teachers' professional development. Similarly, Lawler and King (2000) identified six adult learner principles that should be considered in teachers' professional development:

1. Create a climate in which participants feel respected
2. Encourage their active participation
3. Build on their experiences
4. Employ collaborative enquiry
5. Guide learning for immediate application
6. Empower the participant through reflection and action based on their learning (p. 17).

The inclusion of these principles in the design of teachers' professional development represents a unique opportunity to help overcome rural teachers' professional and geographical isolation and provide encouragement and support for peer reflection and collaboration. Figure 1 illustrates the potential result of considering adult learners' characteristics and rural teachers' challenges in designing professional development where rural teachers can collaborate, establish a community of practice, gain knowledge relevant to their own context, and receive ongoing support.

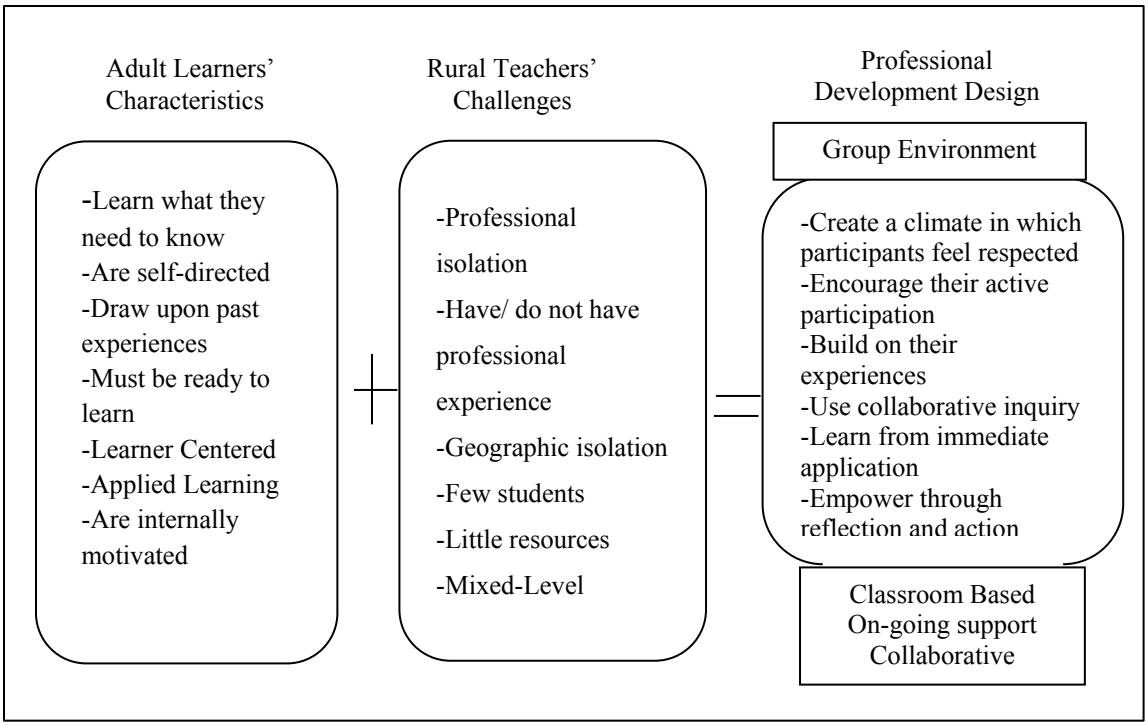


Figure 1 Professional development based on characteristics of adult learners and rural teachers challenges.

Conclusion

Rural context and teachers as adult learners. The combination of rural settings' characteristics and those of teachers as adult learners creates a scenario, which requires policies that cannot follow one-size-fits-all standards. These policies should address rural teachers as learners who want, and are able to participate in the process of creating a training program oriented to their needs and who have professional experience, which can be supportive of other teachers. Consequently, it is necessary to start by identifying what teachers need and expect from a professional development program. More to the point, it is necessary to be aware of how the rural context affects education and what other alternatives can be implemented to train teachers in rural areas. The following sections will describe rurality and how online learning communities can be a potentially valuable resource for teacher professional development in rural areas.

CHAPTER II

LITERATURE REVIEW

General Description of Rural Communities

Definitions of rurality. According to the World Bank, the current rural population in the world is approximately 3.3 billion. However, this number may vary based on the indicators used to identify settings as rural. The Food and Agriculture Organization for the United Nations (FAO) and the Rural Development Division define rural areas as "settlements with an average of 10.000 inhabitants and located in areas where the dominant features are farms, forest, bodies of water, mountains, and/or desert" (Atchoarena & Gasperini, 2003, p. 35). Some countries, such as Chile, have other elements to add to the definition of rurality, such as the proximity of urban centers, access to roads, and availability of utilities such as water and electricity (Sauvageot & Dias Da Graca, 2007). Every country has its own views of what rural means: however, FAO's approach tends to be more generalizable in indicating that:

> A rural area should meet two criteria: one related to place of residence and land settlement pattern, and the other related to the type of work that residents engage in. First, rural areas are generally open areas, with low settled population densities. A high proportion of the unsettled land area and/or land used are for primary production (mining, agriculture, livestock, forestry, fisheries). Second, the residents of rural areas are largely dependent – either directly or indirectly – on these primary production activities as their principal, if not their only, source of livelihood (Atchoarena & Gasperini, 2003, p. 37).

Rural population distribution. Based on these two criteria, it is estimated that the world's rural population has been decreasing in recent years. According to United Nations projections for 2030, the rural population will decrease in more developed regions and increase in less developed areas. Atchoarena and Gasperini (2003) in their report for UNESCO, estimate that by the year 2030, in spite of migration movements to urban areas, there will still be a significant rural population of 3.08 billion, and this population will be in need of basic services such as education.

Characteristics of rural schools. Just as there is no single definition of rurality, there is no single definition for rural schools. It is impossible to generalize a single profile for rural schools since they differ in their size, geographic location, and resources even within the same country and districts. However, rural schools tend to share some unique characteristics such as small numbers of students, multigrade classrooms, a unique role in the community, and geographic isolation.

Number of students. Population density in a rural community tends to be small, less than 500 inhabitants per km^2. This density influences the number of students enrolled in rural schools, which may vary from two to more than 200. The number of students will also affect the number of teachers needed; while some schools may have more than four teachers, others may have just one. Finally, a low density of the student population indicates that there are few students per grade or some grades may not even be represented.

Multigrade classrooms. The small number of students and teachers will determine one of the unique characteristics of rural schools, i.e. multigrade classrooms. In this unique classroom structures students of different ages and grades are grouped together and attend classes in one classroom. Depending on the number of students and the grades they are enrolled in, some schools may have all grades combined or just a few. This strategy of combining grades allows for effectively expanding the school system's capacity. At the same time, a multigrade classroom requires teachers to coordinate their planning in a way that they can teach a subject to several different grades at the same time; this is termed *multi-planning*.

Remoteness. Another characteristic of rural schools is their relative remoteness from urban centers. This remoteness is usually exacerbated by minimal and unstable transportation and adverse climate conditions. Geographic isolation and difficult access to schools may also affect the attendance of students and therefore their learning outcome. Finally, this same remoteness and the geographic isolation may affect the quality and availability of telecommunications such as the Internet and telephone.

Role of schools in rural communities. Rural schools play a significant role in the community. According to Wotherspoon (1998), "schools in rural areas can provide basic training for children and youth, extend skills for work and leadership, and offer a focal point and physical infrastructure for the social and political life of the community" (p. 131). Thus, rural teachers become the main and sometimes only source of information, social leadership, and learning. Due to all these characteristics, rural schools become a significant organizational component in rural communities.

Rural teachers. The rural schools' characteristics indicate that working in rural areas can be particularly difficult for teachers. Consequently, as Monk (2007) indicates, this negatively affects the hiring and retention of teachers since few individuals are attracted to rural schools settings because of the challenges they may encounter. Teachers typically learn to be rural teachers on the job. They receive minimal specific additional academic preparation to work in rural areas. Without little specific experience and with minimal training to deal with rural school's characteristics, they face hard challenges. These challenges include planning for multigrade classrooms (which requires the teaching of a wide variety of subjects), being "the only subject matter expert in the building" (Falvo, 2003, p. 22), playing administrative and teaching roles at the same time, and sometimes dealing with issues such as low salary and professional isolation.

Rural teachers' professional isolation. Perlman and Peplau (1981) defined professional isolation as "the unpleasant experience that occurs when a person's network of social relations at work is deficient in some important ways, either quantitatively or qualitatively" (pp.31). Although this challenge is not unique to them, rural teachers may be more vulnerable to the lack of professional and social relations at work since they may have only one or two colleagues to work with, some of whom may work in different academic areas. Another difficulty is not having the chance to meet teachers from similar schools due to professional isolation, which limits support, innovation, insights, and validation of accomplishments.

Needs for teachers' professional development in rural schools. Teachers' professional improvement has been identified as a need due to the demonstrated impact of well-prepared teachers on students' learning. The conclusion reached in the article UNESCO Strategy on Teachers for 2012-2015 is that "what matters in the end is, precisely, to configure a teaching force in an environment that rewards professional improvement and that is committed to improve the opportunities for student learning with well qualified and duly supported teaching practices" (UNESCO, 2012, p. 1).

Programs such as the International Research and Training Centre for Rural Education (INRULED) and Education For All (EFA) (2012) agree on teachers' professional development needs, indicating that "a challenge for the coming years is to offer high levels of professional enhancement to teachers and career development policies that improve the quality of their lives and the condition of their work" (p. 5). The need to reinforce teachers' improvement has been established as a priority. Specifically, three areas have been identified:

(a) recruiting highly qualified teachers and inducting them effectively into rural schools;

(b) providing effective teachers' professional development that is aligned with research-based strategies and school improvement goals;

(c) retaining teachers in geographically isolated schools (UNESCO, 2012, p. 2).

Rural Chilean Schools

About Chile. Chile is a South American country characterized by a geography, which includes diverse terrains such as mountains, deserts, and fjords, and economic and political stability, which led the country to join the Organization for Economic Cooperation and Development (OECD). This organization has recognized the progress and effort made to improve the quality of life among Chilean citizens in the last 30 years, as well as a sustained attempt in improving the quality of education and the levels of access to it.

Chilean system of education. The Chilean system of education includes twelve years of compulsory education and is divided in the following categories:

1. Early Education and Care: It is not compulsory and is available for children under the age of four. This stage is the equivalent of pre-kindergarden in US.
2. Primary Education: This is divided into two terms, First Cycle from 1st to 4th grade and Second Cycle from 5th to 8th grade. This is similar to stages Elementary school and Middle school respectively in the US.
3. Secondary Education: Four years of compulsory education for students aged between 14 to 17. This is equivalent to High School in the US.
4. Higher Education: Education for students between 16 to 24 years of age. In order to enroll in a higher education institution it is necessary to complete secondary education and take a national aptitude and knowledge test. [Higher Education] can be pursued as a "professional track and as a technical track

through Professional Institutes, Technical Training Centers and Universities." (Cox, 2005, p. 1)

Number and distribution of rural schools in Chile. The rural population of Chile is estimated to be 2.4 million, or 15% of the total population. The number of rural schools has decreased from 4.143 in 2010 to approximately 3.793 in 2013.

Table 1 illustrates the geographic distribution and diversity of rural schools in Chile. The major characteristics of Chilean rurality relate primarily to geography and sources of income. However, specific population of indigenous groups such as Mapuches and Aymaras are associated with the rural population. Some of the geographic differences can entail extreme differences in accessibility "since they can be located in deserts, fjords, islands, and valleys" (Hepp & Laval, 2002, pp. 115-126).

Table 1
Geographic Rural School Distribution in Chile (2013)

Area	Number of Rural Schools	Area's Characteristics
Big North Area (XV-I-II Region)	125 schools	Isolated schools. This is a desert-like area, which has a big Aymara population (indigenous group) and [where] income is based on copper extraction.
Small North Area (III-IV Region)	358 schools	Main income comes from agriculture, mining, and grape production.
Center Area (V-VI-VII-XIII Region)	982 schools	Main income comes from industry, agriculture, port activity. Rural schools in this area are quite close to urban centers.
South Area (VIII-IX-XIV-X Region)	2281 schools	This is an area characterized by mountains, islands, and sea. It concentrates a high number of Mapuche population (indigenous group). Main income comes from agriculture, fishing, livestock industry, forest industry, and touristic industry.
Extreme South Area (XI-XII Region)	47 schools	Isolated schools. Low population density; fishing and livestock industry are characteristic of this area.
Total	3,793 schools	

Source: Carlos Moreno. Director of Rural Education at Playa Ancha University, Chile. 2013

Rural schools administration. In terms of organization and administrative policies, all schools, rural as well as urban, can be classified into four types:

1. Public-Municipal schools are financed through an attendance-based, per-pupil public subsidy. In 2010, 3.246 rural schools were classified as municipal. In this administrative organization the local government hires teachers and implements and maintains the infrastructure and utilities.

Curricular-related policies, however, are determined by the Chilean Ministry of Education.

2. Private subsidized schools are financed through an attendance-based system as well as thorough parental contributions. Teachers are hired and paid by the school administration.

3. Private paid schools receive no government subsidies and operate entirely [based on] parental contributions.

4. Corporation schools are vocational high schools managed by business corporations with government funding, especially established for this purpose (not a per-pupil subsidy) (Cox, 2005, p. 2).

Number of teachers in rural schools. The majority of rural schools have just one teacher, although there are schools with two or even more than six teachers (See Table 2). As a result, it is common to find multigrade classrooms as well as combined grades to teach students of different ages. Normally, rural schools deliver just primary education. Once the students have graduated from primary education, they will have to move to another town or city to complete secondary education. Consequently, according to Moreno (2007), many rural students finish secondary education in boarding schools.

Table 2
Number of Rural Schools and Rural Teachers (2010)

Number of Teachers	Number of Rural Schools
1	1578
2	500
3	278
4	231
5	195
6 or more	1361
Total rural schools	4143

Source: Patricio Gutierrez Mella, Coordinator Rural Education Program in Chile. 2010

Rural teachers' training. In order to become a teacher in Chile candidates must take four to five years of university courses related to a specific subject area as well as courses related to curriculum and assessment. They are also required to have a supervised internship in a school setting. This training is the same for teachers who will teach in urban or rural schools. Normally, teachers in Chile do not receive any specific or formal training to work in rural areas; an exception to this would be Universidad de Playa Ancha, which provides an option to specialize in rural education. This absence of specific training results in a need for teachers to learn how to teach in rural schools through on-the-job experiences. In some cases, new rural teachers are faced with school related challenges, such as teaching multigrade classes with limited resources. Other challenges affecting teachers who come from urban areas involve lifestyle changes, as they must adapt to living in a rural community, get accustomed to unstable transportation, and experience geographic isolation.

Rural schools improvements. In order to support rural schools, the Chilean Ministry of Education has implemented various initiatives such as increasing the salary of rural teachers and the implementation of the program MECE-Rural (Improvement of Access and Equality to Education Program). This program is "specifically designed to support small rural schools, where one to three teachers work with combined age groups of children" (Cox, 2005, p .15). The main focus of this program has been to develop "language and math skills, and consist[s] in the provision of special teaching and learning materials to teachers and pupils, and intensive teachers' professional support and development activities, provided by the supervision system of the Ministry of Education" (Cox, 2005, p. 15).

Part of the support given by the government to teachers has been implemented through *Microcenters* [to be discussed in more detail in the next section]. Another resource to support teachers from rural areas has been the implementation of technology labs and training to integrate technology into their teaching practices. This initiative was carried out by a national project named "Enlaces" (English: links), and provided two years of training for the teachers in every school. This initiative was of benefit to students and eventually their parents who learned to use the school computers. This involvement of the family demonstrates the important role that schools have in rural communities. Consequently, it appears that any improvements that affect the school infrastructure and /or the teachers' teaching practices will help to encourage the development of the community.

Professional development for rural teachers in Chile. The government programs led to the implementation of the entities called Microcenters. In these microcenters, teachers "get together from a cluster of schools to meet face-to-face monthly. They exchange experiences and work on educational projects for their schools" (Avalos, 1998, p. 219). Teachers see this teachers' professional group modality as an opportunity for "learning from each other" (Avalos, 1998, p. 219). The incorporation of microcenters gives teachers the opportunity to reflect on their practices and collaborate with each other based on the needs of their students and professional context.

Although this initiative has helped to break the isolation of rural teachers, it is hard for them to keep up the community of practice once the meetings are over, mainly because of geographic distance, adverse climate conditions, unstable communication systems, and lack of regular transportation.

Other teachers' professional development programs in Chile for both urban and rural are implemented by different educational institutions; however, the Center of Development, Experimentation and Pedagogic Research (CPEIP in Spanish) is an organization insert specifically by the Chilean Ministry of Education to design, implement, and evaluate teachers' development programs. The Chilean educational reform efforts and the framework for best practices have led to the implementation of professional development programs, "having as its purpose to improve teachers' content knowledge as well as communicational and pedagogical skills, the final aim of all this professional training is to improve students' learning" (Cartes & Le-Bert Limited, 2010, p. 102).

Teachers' professional development evaluation in Chile. A study commissioned by the Ministry of Education to Cartes and Le-Bert Limited (2010), an independent assessment agency, to evaluate the teachers' professional development programs, concluded that the programs are based on "global diagnosis" which are not specific enough and therefore "do not provide quantitative information to either identify the addressed population or objective" (p. 9). Moreover, they do not provide a foundation "to justify their implementation and duration" (Cartes & Le-Bert, 2010, p. 683). This evaluation revealed flaws in the design of teachers' professional development programs that hinder the attainment of their goals and positively impact teachers' training as well as students' learning.

The Cartes and Le-Bert study reveals an absence of instructional design strategies such as a prior identification of specific problems before implementing teachers' professional development. Another issue identified in their evaluation is the "lack of follow up and evaluations or continuous feedback and the lack of identification of factors that could hinder or encourage the implementation of the programs" (p. 9). Post-training evaluations by participants normally address "the perception of teachers related to the quality of training, the institution which implemented it, and the objectives attained during the training" (Cartes & Le-Bert, 2010, p. 57). However, such typical program evaluations do very little to measure the impact of the program in the actual teaching and students' learning outcomes; consequently, little is actually known about the long-term effects of such training programs. The researchers recommend the implementation of teachers' professional development programs that are based on a

diagnosis of the needs of a specific group of teachers, and which address individual teacher group needs associated with different areas of the country.

The study concludes that the teachers' professional development programs studied do not significantly affect the learning outcomes of students. This conclusion is based on the analysis of teachers' participation in teachers' professional development as well as in the "System for Measuring the Quality of Education (SIMCE in Spanish), a system to monitor and improve the educational performance of schools" (Matear, 2006, p. 40). If teachers' professional development programs are expected to affect positively students' outcomes, it is necessary to re-consider their design and implementation.

In summary, the weaknesses identified in teachers' professional development programs in Chile seem to be mainly associated with the exclusion of teachers' characteristics as professionals and learners when designing professional development resources and practices. Consequently, the integration of adult learner principles in the design of teachers' professional development should offer promise for more successful training in the future. Likewise, the use of new teachers' professional development delivery formats, especially online technology, may provide an instance for teachers to interact and collaborate systematically with peers exchanging and providing professional support. These conclusions emphasize the need to learn more about existing teachers' needs, perceptions, and available resources such as online tools.

Online Teacher Professional Development for Rural Schools

The literature highlights the emerging benefits that online tools offer for creating and delivering more successful teacher professional development programs. According

to Scott (2010), the significant number of efficient and sophisticated technology along with social networking tools that are currently available encourage teachers to explore the use of them not only in their teaching practices but also in their own professional development.

Today's networking technologies facilitate teachers' professional development through the flexibility of access in relation to location and schedule; these factors offer a number of benefits for self-paced training as well as collaboration among learners. Such enhancements to teacher professional development programs delivered through networking technologies are especially important to overcome geographic isolation in rural communities. According to Rhoades (1993), rural teachers would benefit from using networking technologies in multiple ways, including sharing resources, academic information, and providing professional support. As teachers become familiar with these tools, they can also make them available to their students to further enhance learning in their classrooms. A similar perspective is presented by Salazar, Aguirre-Munoz, Fox, and Nuanez-Lucas (2010), who argue that online education is a "significant long-term strategy for the field of teacher preparation and this is particularly true for continued professional development in isolated areas where access to training is usually limited" (p. 1).

Online education for teachers can take different formats, from online-structured courses to more flexible instances such as online learning communities. Each of these formats presents the advantage of allowing teachers to communicate over long distances and in a time-flexible way. In particular, online learning communities seem to provide a

source of interaction, constant support, feedback and the opportunity to play an active role as learner. The following section focuses on the characteristics and elements of learning communities and their relation to online resources.

Online learning community. Online learning communities are rooted in the existence of professional learning communities, where teachers and principals in a school constantly pursue and share learning. Wilson and Ryder (1996) indicate that these learning communities are generally characterized by "distributed control, commitment to generation and sharing of new knowledge, flexible and negotiated learning activities, autonomous community members, high levels of dialogue, interaction, and collaboration" (p. 801). Consequently, online learning communities are strongly based on collaboration among the participants. This collaboration can be structured to have a formal academic leader (online community of practice), or utilize a less formal structure which requires every participant to manifest some leadership (online community of learning). Either of these two approaches implies sharing of experiences and new approaches to problem solving and according to Lave and Wenger (1991) supports the development of personal skills. These communities may or may not have a leader moderating the exchange of information, and rely on the intrinsic motivation of participants to discuss and share topics.

Drawbacks of online learning communities' implementation. While the implementation of online learning communities through networking technologies seems to be an obvious solution to overcome the isolation felt by rural teachers, research shows this practice may still fail to support teachers' professional development. Such failure is mainly associated with a lack of understanding of the conditions for how teachers actually learn and collaborate with each other. This situation is addressed by Schlager and Fusco (2003), who indicate "failure is related to neglect of ways in which people learn, their resourcefulness in solving problems, and the communities of practice in which they participate" (p. 203). They therefore suggest that one should observe teachers' practices and their characteristics in the workplace, as the variation and complexity of teaching workplaces and communities can pose an obstacle to the implementation of any type of teacher professional development program. Schlager and Fusco (2003) conclude, "local values and norms of practice have proved formidable barriers to effective professional development" (p. 205). Consequently, it is recognized as a priority that we "understand the process through which a community works, evolves, and interacts with policies, programs, and informal activities to help teachers become accomplished educators and adult learners" (Schlager & Fusco, p. 217). Acquiring and utilizing such information before designing and implementing teachers' professional development in any format is essential to avoid putting "the cart before the horse" (Schaller & Fusco, p. 203), that is, we must avoid implementing a design for a user whose characteristics as learner as well as his/her context and needs are unknown. Obtaining information about the professional context of rural teachers, their preferences

for learning, their professional needs as well as perceived obstacles and benefits to using online tools, will benefit the design and implementation of teachers' professional development. Moreover, this information will be help to ensure that the incorporation of online tools will provide maximum support for teachers' professional development in rural areas.

CHAPTER III

METHODOLOGY

Purpose

The purpose of this research study is to gather relevant information concerning the design of teachers' professional development for use in rural areas and the potential role of online networking in its design, development, and delivery.

General Objectives

Two general objectives were identified for the study: (a) to determine the needs and perceptions of rural teachers with respect to teacher professional development programs, and (b) to explore factors related to the use of online networking in order to design and deliver teacher professional development programs.

Specific research objectives. The specific objectives identified for the study were:

1. To identify rural teachers' perceived needs and expectations in relation to methods of delivery and topics to be included in their professional development.
2. To explore the preferences for using adult learning principles to design teachers' professional development.
3. To identify rural teachers' perceptions about the usefulness of online systems in their teaching practices.
4. To identify benefits and obstacles to implementing teachers' professional development in their use of online technology.

5. to identify demographic aspects related to teachers and rural schools background.

Research Questions

This study was guided by the following research questions:

1. What are the levels of teachers' preferences and needs for topics and methods of delivery that are identified by rural Chilean teachers for their continued professional development?
2. Are the principles of adult learning paradigm for the design of teachers' professional development represented in the preferences and opinions of teachers in Chile?
3. What are the barriers and benefits perceived by rural teachers from Chile in the use of online resources to deliver their professional development?
4. What is the relationship between rural school settings and rural teachers' preferences for professional development?

Type of Study

To address the research questions, the researcher implemented a mixed methods approach, as indicated by Creswell and Plano (2005) this approach allows using and integrating both qualitative and quantitative methods to collect and analyze data in a single study. This type of research design is helpful to identify general trends as well as details of the research topic. Further, the researcher chose to use a convergent mixed method design in which the qualitative and quantitative data are collected at the same time, but as two separate instances. The researcher then analyzed the qualitative and

quantitative data sets separately. Finally, the researcher summarized and interpreted the results of both sets of data separately and merged the results in the interpretation of the study. See Figure 2 for a description of the convergent model of mixed method analyses followed in this study.

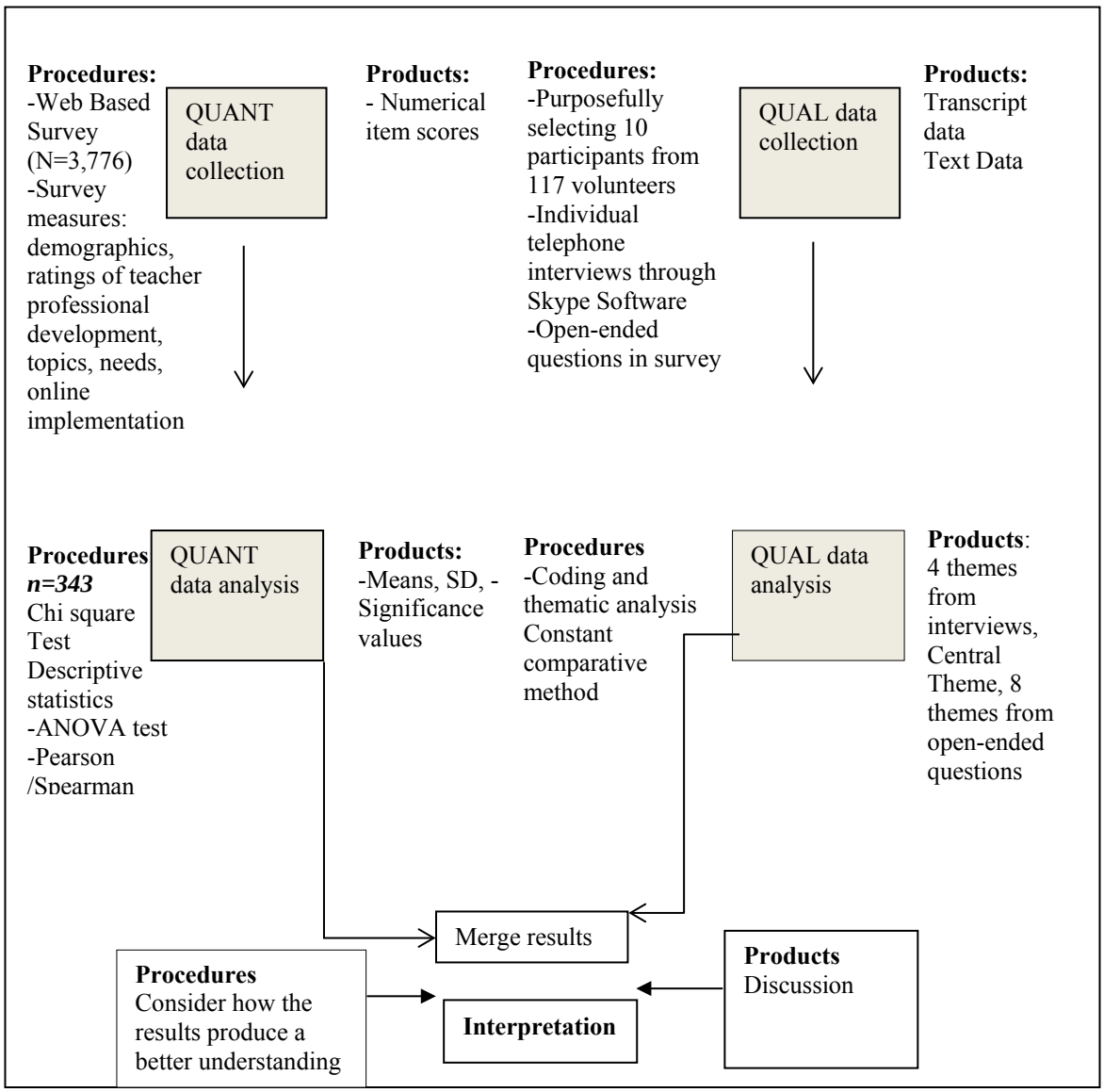


Figure 2 Visual model for mixed methods convergent design procedures. (Adapted from Creswell & Clark, 2005).

Target population. The population of the study consisted of rural teachers from Chile. The sample population was composed of rural teachers who had already graduated from university and were currently working in rural schools. The only requirement to participate in the study was to be teaching in a rural school at the moment when the study was being conducted.

Sample Population

A list of emails of rural schools throughout Chile, issued by the Coordinator of the Statistic Department of the Chilean Ministry of Education, was used to contact teachers to participate in the study. This list also provided the name of the school and district where each teacher was located, their phone number, and type of school administration they belonged to. The emails were reorganized and classified according to the administrative regional divisions in the country. A total of 3,776 rural schools were contacted through email to participate in the study with the following breakdown of the schools by administrative region: Region I (n= 47), Region II (n= 18), Region III (n= 39), Region IV (n= 340), Region V (n= 184), Region VI (n= 262), Region VII (n= 429), Region VIII (n= 595), Region IX (n= 705), Region X (n= 611), Region XI (n=32), Region XII (n= 15) Region XIII (n =138), Region XIV (n=323) , Region XV (n= 38).

Ethics and human subjects' protection. Since this study involved participants from a foreign country, Chile, the researcher was requested by the Institutional Review Board (IRB) at Texas A&M University, which coordinates the Human Subjects Protection Program, to add extra considerations to secure the protection of the participants. The requested considerations submitted to the IRB were: (a) assurance that data from participants would not be disclosed to any local educational authority or peers, (b) a copy of the online survey and interview, (c) a cultural letter from a professional involved in the field of rural education from Chile acknowledging the appropriateness of the study, (d) a consent waiver in order to use an information sheet instead of a signed consent form, (e) a letter of verification of back translation, and (f) a letter of consent to use emails from the Director of Statistics Department in the Ministry of Education in Chile.

Budget. The only cost involved in the study was to conduct the interview calls through Skype. This cost varied depending on the duration of the call and whether it was made to a computer, a landline, or a cell phone number. The researcher paid all costs, there were no costs incurred by the interviewees.

Validity

Instrument validity. In order to test how consistently the survey measure what is supposed to measure a Cronbach alpha test was run among the 28 items resulting in α=.88. This is a large and positive coefficient indicating the survey is consistent in its measurement.

Internal validity. Content validity responds to the question "Do the items in this instrument assess what they are supposed to?" Items in this survey were pre-tested with two rural teachers and two Chilean researchers before implementation. Their opinion provided face validity to the survey. Also, the items were created based on the literature review about adult learning paradigms, online learning communities, and articles about rural schools characteristics.

External validity. Since this study is a non-random sample and the response rate is low, the results may not be generalizable to an external population with different characteristics from this sample.

Qualitative Procedures

Qualitative instruments. Qualitative data was gathered through two open-ended questions from the survey and ten single interviews. The purpose of the collecting of these data was to further interrogate and develop the results obtained from the quantitative data.

Interview case selection. Interview participants were a subset of the respondents in the quantitative phase. The procedure to select the participants was initiated at the end of the main survey with a question asking teachers to volunteer for a follow-up interview. Participants who decided to volunteer submitted their email address in this question so they could be added to a list of possible interviewees. A list of 117 volunteers resulted from which 11 cases were selected to be interviewed. Criterion sampling strategy (Patton, 1990, pp. 169-190) was used to select these cases to be interviewed. Cases were selected based on meeting the following criteria: (a) teachers

from regions with the lowest responses, (b) teachers who taught more than one grade in their classroom simultaneously, (c) teachers who had more than one role at school, and (d) teachers who were in favor of and teachers who were against using online systems to implement teachers' professional development. In order to protect the anonymity of the interviewees they were identified with pseudonyms (See Table 3)

Table 3
Demographic Data of Interviewees

	Gender	Age	Regional group	Years teaching	Role at School	Opinion Internet in TPD	Teachers	Multi Grade[a]	Students enrolled
Louise	F	30-39	Far South	6-10	T & P	Against	2	3	9
Kay*	F	- 30	Far South	1-5	T & P	In favor	1	3	6
Angie*	F	30-39	Far North	11-15	Teacher	In favor	4	2	24
Joseph	M	30-39	South	11-15	T & P	In favor	1	3	10
Christin	F	40-49	South	6-10	Principal	In favor	12	1	148
John	M	40-49	South	16-20	Principal	In favor	15	1	195
Joanna	F	50-59	South	21-25	T & P	Against	2	3	5
Ralph*	M	40-49	Center	16-20	Principal	In favor	8	2	109
Alisson	F	50-59	Center	26-30	T & P	In favor	2	3	7
Loreen	F	40-49	South	1-5	C. Sp	In favor	11	1	148

Note: M= Male, F=Female. T & P=Teacher and Principal, C.Sp= Curriculum specialist, TPD= Teacher Professional Development,
[a]=Multigrade= Two or more grades taught simultaneously
* Lowest response regions

Interview consent to participate. A cover letter including consent to participate in the interview was emailed to those respondents who volunteered and had been selected to participate in the interview. This letter explained the objectives of the study, the protection of the participants' identity, and the right to withdraw from the interview at any moment. Finally, this letter requested contact information for conducting the interviews (See Appendix C).

Data collection. The responses to the two open-ended questions in the survey were downloaded the first week of October. The ten interviews were conducted over an 8-week period, starting October 18, 2013. Teachers emailed the researcher to provide a date, time and phone number or Skype contact name. The interviews lasted from 20 to 38 minutes and were mostly conducted after 6:00 pm Chilean time (3:00 pm USA Central time). It was necessary to re-schedule two interviews due to teachers' time conflicts.

These interviews were conducted using video/audio conferencing computer application called Skype. This system allowed performing eight phone calls and two videoconferences. All the audios of all these interviews were recorded using Amolto Call Recorder, an application that automatically produces and stores audio files in a MP3 format.

Qualitative interview. A semi-structured interview was implemented, the researcher followed a script presenting seven standard questions, but also included spontaneous questions, which were asked based on the responses provided by the interviewee that prompted follow-up questions. The selection of the structured questions is described in the following section.

Questioning route. Strategies to formulate the questions were adapted from focus groups interviews by Krueger and Casey (2009).

a) Opening & Introductory: What is it like to be a rural teacher?

This question provided information about the personal and professional background of the participant in rural schools and led to asking about their needs such as professional development.

b) Transition: How necessary are teachers' professional development programs for your teaching practices? This question moved the conversation into the key questions (Krueger & Casey, 2009, p. 39).

c) Key questions: The next four questions drove the study and addressed the participant's opinions, and expectations (Krueger & Casey, 2009, p. 39).

c.1) How beneficial for your teaching practices have teachers' professional development programs been?

c.2) What benefits do you expect to get by participating in teachers' professional development programs?

c.3) Remember any teacher professional development you attended when you had a good learning experience, could you describe to me the activities and elements it had? This question evolved after the first interview to "remember a positive learning experience and a not positive experience."

c.4) How could technology be of help in teachers' professional development programs for rural teachers?

d) Ending question: If you had the chance to suggest something to people who design teachers' professional development for rural teachers what that would be? This question also evolved to add an option about the participant being the designer of teachers' professional development programs for rural teachers.

This question was of help to get more information that the participant had not given before (Krueger & Casey, 2009, p. 39).

Role of the interviewer. In order to avoid influencing the interviewees' opinions the researcher did not disclose her own experience in rural schools in Chile. She used a standard script to introduce herself, which explained the purpose of the study, the approximate number of time the interview would take, and requested authorization to record the interview for transcription (See Appendix G). It was also indicated that there were no right or wrong answers for the questions, participants were given the option to stop the recording at any moment, finally and for the sake of trustworthiness in the study, participants were asked to check the transcript of the interview once this was emailed to them.

Trustworthiness. It was necessary to ensure that the procedures and findings in the qualitative phase were consistent and reliable, which according to Guba and Lincoln (1985) provides trustworthiness to the study. To establish trustworthiness in this qualitative analysis the following techniques were considered: peer debriefing, reflexive journal and member checks.

To conduct peer debriefing, a work colleague outside the research context who had a general understanding of the study, was selected to listen to the researcher's reflections and concerns. To support the transferability of dependability and confirm validity of the study, the researcher kept a reflexive journal that included information about the researcher's schedule, logistics, insights, and reasons for methodological changes when necessary. Finally, to allow participants to correct errors of fact the

researcher emailed the transcript to the interviewees. One interviewee disagreed with the content and transcription of the interview and did not authorize the use of it. The files associated to this interview were deleted by the researcher. Five interviewees checked their transcripts and authorized the use of them, the other five did not respond. Finally, in order to address the validity of the findings, the open-ended questions were used as data to triangulate with the findings from the interviews to identify areas of agreement and areas of divergence.

Quantitative Procedures

Quantitative instrument. The quantitative phase involved the use of an online survey developed by the researcher in English and Spanish and implemented with Qualtrics Software. The survey was tested for language accuracy through a back translation process where the Spanish version was translated into English and then compared to the original English version. Two rural teachers from Chile and two Chilean researchers then proofread it in order to identify potential complications such as misinterpretation, culturally inappropriate vocabulary, question phrasing, question formatting, ambiguous words, and phrases, and the relation between the questions and the study objectives and theoretical frame. The research protocol statement included in the survey was also checked to ensure that its intended information was accurate and its cultural background was appropriate.

Survey objectives. The objectives of the survey were as follows: (a) to identify teachers' preferences, needs for topics and methods of delivery that are identified by rural Chilean teachers for their continued professional development, (b) to identify

obstacles and benefits perceived by rural teachers from Chile in the use of online resources to deliver teachers' professional development, (c) to identify teachers' perceptions in relation to the usefulness of online networking in professional development, and (d) to collect demographic information from rural school teachers.

Survey questions. The survey was designed to avoid leading questions that could imply assumptions or anticipated outcomes. There were no questions involving sensitive information and all the questions fit the informational background of the respondents. Response format options included open-ended, close-ended, and Likert scale questions.

The resulting 23 survey questions were divided into three sections (See Table 4). The complete survey can be found in Appendix E. Once finishing the survey, the participants were re-directed to a single-question survey: an option to volunteer for a follow-up qualitative interview by replying with an email to be contacted.

Table 4
Online Survey Questions

Section	Type and Number of Questions	Objective
Demographics	15 Closed-ended questions	To identify school and teachers' demographic information.
Professional Development	3 Likert scale questions One Open-ended question	To identify the needs of teachers' professional development in relation to topics, delivery methods, and learning principles to be included.
Online Technology	3 Likert Scale questions One Open- ended question	To identify the obstacles and benefits perceived by rural teachers to the use of online technologies for teachers' professional development.
Survey End Option	Option to be directed to another survey phase.	To identify volunteer participants in follow-up interview of the study

This online survey was implemented in Qualtrics software, which allowed sending the 3,776 emails and subsequent reminders to participants who had not responded to the survey (more details about this in Survey management section). Data collected in Qualtrics was downloaded into file formats compatible with Microsoft Excel and SPSS analytics software.

Participation consent. A cover letter was created through the Qualtrics email feature, which invited the rural teachers to participate in the study. This cover letter (a) described the objectives of the study (b) identified people conducting it, (c) stated the survey confidentiality, (d) stated no payment or any other type of reward would be given for participation, (e) stated participation was voluntary, and (f) described the survey and interview phases of the study. Finally, an URL embedded in the email cover letter was linked to the online survey to be completed. The first page of the survey described the protocol of participation in the study, including confidentiality and anonymity, and provided an option to accept or decline to participate in the study.

Survey management. The researcher implemented a pilot test to assess the procedures for sending, recording responses, and storing data in Qualtrics by sending an email with the embedded survey link to two rural teachers and two researchers in Chile. Their survey responses were successfully recorded and stored in Qualtrics.

After the testing, the cover letter including the embedded URL to the survey was sent through the Qualtrics email survey feature on August 19, 2013. The survey sent could be answered by any person at school but just one single time. Due to the large number of emails (3,776), the researcher used a batch upload feature to send the emails. There were three follow-up reminders sent every five to six days by the researcher. These reminders were sent through the Qualtrics email history feature, which identifies the participants who submitted their responses. The second reminder included a message emphasizing the benefits of this study for teachers. The researcher sent a second invitation to the list of participants from Chile's administrative regions that provided few

responses after the second week of the survey. A fourth reminder was sent in the form of a “Thank You” note on Sept 19, 2013. In general, the response rate was high immediately after each reminder and then decreased in the following days to one or three responses daily. Data was downloaded from Qualtrics one month and two weeks after the survey was initially sent and the responses had declined to none in a one-week period. Consequently, 370 responses were collected, which was equivalent to 9.8% of the participants initially contacted. Some responses addressed only the first 3 to 5 demographic questions, and so these responses were deleted; therefore, the final number of responses used was 343, which was equivalent to a response rate of 9%.

CHAPTER IV

QUANTITATIVE RESULTS

Introduction

The purpose of this study was to examine the needs and perceptions of rural teachers from Chile in relation to teacher professional development and the potential role of technology in its implementation. Information was collected through an online survey (*n*=343) and interviews using Skype software (*n*=10).

Response rate. Online surveys were sent to 3,776 rural schools from all 15 administrative regional divisions (See Table 5); responses obtained reached a total of 9% including responses from teachers and principals.

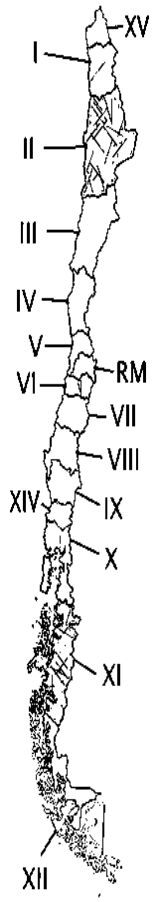
Table 5
Number of Rural Schools Contacted by Administrative Regional Division

Region	Number of schools contacted	Respondents	%
XV	38	4	1.2
I	47	3	.9
II	18	2	.6
III	39	5	1.5
IV	340	35	10.2
V	184	23	6.7
XIII (Capital)	138	13	3.8
VI	262	14	4.1
VII	429	38	11.1
VIII	595	72	21.1
IX	705	54	15.7
XIV	323	23	6.7
X	611	53	15.5
XI	32	3	.9
XII	15	1	.3

Note: Regions are displayed in geographic order from North to South. The X and I regions were split recently creating two more regions, XV and XIV which are positioned accordingly.

To confirm that the responses obtained were proportional to the surveys sent by administrative regional division, a test of significance difference was implemented. A Chi Square Goodness of Fit test (χ^2) was chosen since this test is used for data with both variables measured in the nominal scale (Rea & Parker, 2005, p. 183) as is the case with the geographic location variables. Since it is assumed that in a Chi Square Goodness of Fit test (χ^2) the frequencies should exceed five in each cell (Agresti & Finlay, 2009, p. 227) regions with less than five frequencies were combined into groups in order to attain theoretical cell frequencies in responses per region. This resulted in the following regional groups: Far North/ South group (*n*=18), Central group (*n*=123) and South group (*n*=203) (See Table 6). In order to support the split of the sample into these three regional groups, the researcher reviewed Chilean databases related to demographics to identify other similarities such as population density, geographic characteristics, and indigenous population distribution. The responses obtained from each of these groups are presented in table 7.

Table 6
Regional Groups and their Corresponding Regions

	Far North/ South group (*n*=18), Regions: XV-I-II-III-XI-XII Geography/Climate: Desert, Desert semi-arid, Sub polar oceanic, semi-arid/ ice cap Indigenous population in the group: 15% Average Population Density: 4.34//km^2 School Administration: Public- Public Corporation- Private Subsidized
	Center group (*n*= 122), Regions: IV- V-VI- XIII (RM - Capital)-VII Geography/Climate: Semi-arid, Mediterranean, Temperate oceanic Indigenous population in the group: 7.2% Average Population Density: 103//km^2 School Administration: Public- Public Corporation- Private Subsidized
	South group (*n*= 203), Regions: VIII-IX-XIV-X Geography/Climate: Temperate oceanic Indigenous population in the group:17% Average Population Density: 34.3/km^2 School Administration: Private Subsidized- Public- Public Corporation

Sources: Chilean Census 2012. Chilean School Administration Data Base, Ministry of Education. Chile.

Table 7
Contacts and Responses According to Regional Groups

Regional Groups	Contacted	Respondents	% of respondents
Far N/S[a]	189	18	0.47
Central[b]	1353	122	3.23
South[c]	2234	203	5.37
Total	3776	343	9.07

Note: Far N/S= Far North/South group.
[a]= Regions= XV-I-II-III-XI-XII
[b]= Regions= IV-V-XIII-VI-VII
[c]= Regions= VIII-IX-X-XIV

A null hypothesis (H*o*) was set indicating that the survey responses obtained per regional group (observed data) are similar to the distribution of surveys sent per regional group (expected data).The alternative hypothesis (H_1) established that the observed data does not fit the model, and the distribution of survey responses received per regional group does not correspond to the assumed distribution of surveys sent per regional group. For these data, χ^2 (2, N=343) = 0.04, p > .05. This result indicates that there is a high risk of making a type I error, i.e. rejecting the null when it is true. The researcher retains the null hypothesis of no difference and assumes that the distribution of survey responses received from these three groups fits the assumed distribution of responses expected.

Apart from regional distribution, another component tested for significance was the school administration distribution per each regional group (See Table 8).

Table 8
Schools Contacted by School Administration and Regional Groups

	Regional Group					
	Far N/S		Center		South	
School Administration	Contacted	Respondents	Contacted	Respondents	Contacted	Respondents
Public Corporation	25	3	132	12	198	12
Public	153	13	1090	103	1346	136
Private subsidized	11	1	131	7	690	55
Total	186	17	1353	122	2234	203

A null hypothesis (H*o*) was set indicating that the proportion of responses obtained per regional school administration group, (observed data), is in agreement with the distribution of survey for regional school administration group (expected data). The alternative hypothesis (H_1) established that the observed data does not fit the model, the distribution of survey responses received by regional school administration group would not correspond the assumed distribution or proportion of emails sent by regional school administration. Three Chi Square tests (χ^2) were run, one for each regional group across school administration groups, using α=.05 for these data the Far North/South group and all the school administration groups χ^2 (2, N=17) 3.39, $p > .05$. This result indicates that the null hypothesis of no difference is retained assuming that the proportion of survey responses received from the Far North/South regional group across all the school administration groups does fit the assumed distribution of responses expected. A second Chi Square Goodness of fit test (χ^2) was run using α=.05 for these data of the Center Regional group across all school administration groups χ^2 (2, N=122) 19.20, $p < .05$. This result indicates that the null hypothesis of no difference is rejected assuming that

the distribution of survey responses received from the Center regional group across all school administration groups does not fit the assumed distribution of responses expected. The public administration group is over-represented while the particular subsidized is under-represented. Finally, a third Chi Square Goodness of Fit test (χ^2) was run for the South regional group across all school administration groups, for these data χ^2 (2, N=201) 5.06, $p > .05$. This result indicates that there is a high risk of making a type I error, i.e. rejecting the null when it is true. The researcher retains the null hypothesis of no difference and assumes that the proportion of survey responses received from the South regional school administration group fits the assumed distribution of responses expected.

In addition, another component tested was the correspondence between the responses per schools size obtained and the ones expected. The school size classification referred to the number of teachers per school, therefore the range of options were: one-teacher schools, two-teacher schools, three- teacher schools, four to ten –teacher schools, over ten- teacher schools. A Chi Square Goodness of Fit test (χ^2) was run per each school size group across the three regional groups (See Table 9).

Table 9
Schools Contacted by School Size and Regional Groups

	Regional Group					
	Far N/S		Center		South	
School Size	Sent	Obtained	Sent	Obtained	Sent	Obtained
1 teacher	65	1	287	16	793	25
2 teachers	27	3	137	15	320	40
3 teachers	16	5	83	17	176	26
4 to 10 teachers	42	5	333	40	592	64
Over 10 teachers	39	4	513	28	353	36
Total	189	18	1353	116	2234	191

A null hypothesis (H*o*) was set indicating that the proportion of survey responses obtained per regional school size, (observed data), is similar to the proportion of surveys sent per regional school size group (expected data).The alternative hypothesis (H_1) established that the observed data does not fit the model, the proportion of survey responses received per regional school size group would not correspond the assumed proportion of emails sent per regional school size group. Using α=.05 for these data the Far North/South group per all school size group χ^2 (4, N=17) 14.28, $p < .05$. This result indicates that the null hypothesis of no difference is rejected and it is assumed that the proportion of survey responses received from the school size group from this region does not fit the assumed proportion of responses expected; i.e. the one-teacher school group is under represented while the three-teacher school group is over represented.

For the Chi Square Goodness of Fit test (χ^2) implemented for the school size group from the Center group, using α=.05 for these data the Center χ^2 (4, N=116) 22.66, $p < .05$. This result indicates that the null hypothesis of no difference is rejected, consequently the proportion of survey responses received from school size groups in this region does not fit the assumed proportion of responses expected; therefore there are

groups that are under or over-represented. The one-teacher-school group is under represented and the four to ten-teachers school is over represented.

Finally, a third Chi Square Goodness of Fit test (χ^2) implemented for school size groups from the South Group, using $\alpha = .05$ for these data χ^2 (4, N=191) 45.77, $p < .05$. Again, this result indicates that the null hypothesis of no difference is rejected, consequently the proportion of survey responses received from the school size group from the South region does not fit the assumed proportion of responses expected; therefore, there are groups that may be under or over-represented. The one-teacher school group and the over ten-teacher school group are underrepresented. The two-teacher school, three- teacher school and four to ten-teacher school groups are over-represented.

Demographic Data

Survey participants provided answers to 15 questions related to demographic items such as age, gender, and geographic location. Other demographic questions referred to the characteristics of their workplace including number of teachers at school, number of students, and number of grades taught simultaneously among other questions.

Gender and age. The survey question about gender was answered by 340 participants, 50.3% of whom were male (*n*=171), 49.7% were female (*n*=169). The question about age was answered by 343 participants; the choices presented were under 30, 30 to 39, 40 to 49, 50 to 59, and over 60 years old. The largest age group was 50 to 59 (37.6%) and the smallest age group was under 30 (4.7%). In a combined analysis of gender and age responses, the largest age group for female and male was 50 to 59

(*n*=127). The second largest age group was 40 to 49, where females outnumbered males. The age group 30 to 39 had also more females than males. The smallest age group for female was the over 60 group, while for males was it under 30 years old (See Table 10).

Table 10
Age and Gender of Respondents Sample Wise (N=340)

	Gender			
Age	Male	Female	Total	%
Under 30	7	9	16	4.7
30-39	26	47	73	21.4
40-49	45	52	97	28.5
50-59	67	60	127	37.5
Over 60	26	1	27	7.9
Total	171	169	340	100

The researcher did not have previous data about gender and age of the participants in the study; the results obtained are therefore assumed characteristics of this particular sample. A possible interpretation of the results concerning age suggests that younger teachers are less inclined to work in rural schools due to challenging settings. Another possibility is that fewer students are interested in being teachers in general. In this context, UNESCO in the document "Background and Criteria for Teacher-Policy Development for Latin-American and the Caribbean" (2013) indicates that Chile is in an "advanced demographic transition" stage, which implies a decreasing number of school-age children and a high coverage of primary and secondary education. All this results in a moderate demand for teacher replenishment and consequently impacts the interest to

pursue a career in teaching. As for the older group, it could be the case that they have chosen to work and live in the rural community as permanent residents, which may encourage them to work in the same place during their entire working career. The interviewee Kay quoted in her interview as stating that also acknowledged this possibility

> A [rural teacher] makes a family, stay there, and eventually loses the interest to go to another school, to have a new challenge. We start feeling increasingly comfortable where we are, and this is one of the shortcomings that rural education has, rural education… in rural education there is not always a rotation of teachers.

A more detailed analysis was implemented to identify gender and age distribution across the three regional groups. In terms of percentage, the Far North/South group presents a large percentage of responses of teachers under 30 (22.2%) while the Center group has 2.5% and the South Group has a 4.4% in the same category (See Table11).

Table 11
Age of Respondents by Regional Groups (n=343)

	Regional Group						
Age	Far N/S (*n*=18)	%	Center (*n*=122)	%	South (*n*=203)	%	Total
Less than 30	4	22.2	3	2.5	9	4.4	16
30-39	5	27.8	25	20.5	44	21.7	74
40-49	2	11.1	37	30.3	58	28.6	97
50-59	6	33.3	44	36.1	79	38.9	129
Over 60	1	5.6	13	10.7	13	6.4	27

Gender was also analyzed according to the three regional groups. Table 12 presents the distribution of males and females participants by regional group.

Table 12
Gender of Respondents by Regional Groups (n=340)

	Regional Group						
Gender	Far N/S (*n*=18)	%	Center (*n*=122)	%	South (*n*=200)	%	Total
Female	10	55.6	57	46.7	102	51.0	169
Male	8	44.4	65	53.3	98	49.0	171

Teachers' primary education. Question three related to the location of the schools where teachers themselves had received their primary education. The options were rural and urban schools. The largest number of responses sample wise was rural school with 62.2% responses compared to 37.8% for the urban option (See Table 13). A similar analysis was implemented to obtain the preferences according to regional group (See Table 14). This result suggests a tendency of teachers who studied in rural schools to also work in rural settings. This indicate that since they know the challenges associated with rural schools they are better suited to face them than teachers who have never had any connection with rural schools prior to teaching in them.

Table 13
Teachers' Primary School Education Sample Wise (n=339)

Type School	Teacher Primary Education	
	Respondent	% of responses
Urban	128	37.8
Rural	211	62.2

Table 14
Teacher's Primary School Education by Regional Group (n= 339)

	Regional Group						
Type of School	Far N/S (*n*=18)	%	Center (*n*=122)	%	South (*n*=199)	%	Total
Urban	7	38.9	44	36.1	77	38.7	128
Rural	11	61.1	78	63.9	122	61.3	211

Number of teachers working at school. There were 325 participants who reported the number of teachers working at school. The analysis of frequency of responses determined that 59.1% of responses belonged to the category of 1 to 5 teachers working at the school; the smallest frequency of responses is in the category 36 to 40 teachers working at the school at .6% of responses (See Table 15). This result is consistent with the data presented in Table 2 where 67% of the schools have from 1 to 5 teachers. Even though that data is from 2010, the current results show that rural schools tend to be small in relation their staff size.

Table 15
Number of Teachers Working at School Sample Wise (n=325)

Number of teachers at school	Respondent	% of responses
1 to 5	192	59.1
6 to 10	65	20.0
11 to 15	35	10.8
16 to 20	19	5.8
21 to 25	10	3.1
26 to 30	1	.3
31 to 35	1	.3
36 to 40	2	.6

A similar analysis was conducted through the three regional groups, the result indicates a similar tendency as the one identified sample wise (See Table 16).

Table 16
Number of Teachers Working at School by Regional Group (n=325)

Number of teachers at school	Regional Group						
	Far N/S (*n*=18)	%	Center (*n*=116)	%	South (*n*=191)	%	Total
1 to 5	10	55.6	61	52.6	121	63.4	192
6 to 10	4	22.2	27	23.3	34	17.8	65
11 to 15	0	0	16	13.8	19	9.9	35
16 to 20	2	11.1	6	5.2	11	5.8	19
21 to 25	2	11.1	4	3.4	4	2.1	10
26 to 30	0	0	0	0	1	0.5	1
31 to 35	0	0	0	0	1	0.5	1
36 to 40	0	0	2	1.7	0	0	2

School location. Question 4 asked to identify the region where the school was located. The largest frequency of responses came from the South group regions (58.9%), specifically the VIII and IX regions with 21% and 15.7 % respectively. The smallest frequency of responses came from the regions in the North/South group (5.4%), region XII being the lowest with .3% of responses. The Center group represents 35.9% of the responses in the survey. All regions were represented in the responses (See Table 17).

Table 17
Number of Responses Sample Wise (n=343)

Region	Number of Respondents	% of respondents
XV	4	1.2
I	3	.9
II	2	.6
III	5	1.5
IV	35	10.2
V	23	6.7
XIII	13	3.8
VI	14	4.1
VII	38	11.1
VIII	72	21.0
IX	54	15.7
XIV	23	6.7
X	53	15.5
XI	3	.9
XII	1	.3

Note: Regions are displayed in regional order from North to South. Regions I and X were split in recent years, creating two more regions, XV and XIV.

Years teaching. The next questions refer to rural teachers and their profile as teachers. Question 1.5 asks about the number of years teaching in rural school. The choices to answer were less than 1 year, 1 to 5, 6 to 10, 11 to 15, 16 to 20, 21 to 25, 26 to 30 and over 30 years. The largest frequency of responses was from the group teaching over 30 years (*n*=86) at 25.3%, while the smallest frequency of responses was from the group teaching less than 1 year (*n*=8) at 2.4%. The groups teaching 6 to 10 years and 26 to 30 share the same response percentage 13.5% (*n*=46) (See Table 18).

Table 18
Number of Years Teaching Sample Wise (n=340)

Years teaching	Number of respondents	% of respondents
Less than 1 year	8	2.4
1-5	48	14.1
6-10	46	13.5
11-15	37	10.9
16-20	36	10.6
21-25	33	9.7
26-30	46	13.5
Over 30 years	86	25.3

A possible explanation for this result is that fewer younger teachers are working at rural schools, which motivates older teachers to continue teaching over 30 years. It could also be the case that teachers delay their retirement, which affects the availability of new teaching positions in rural schools.

This same question about the number of years taught was addressed by regional groups. The largest frequency of responses in the Far North/South region is the group teaching 1 to 5 years (*n*= 6), while in the Center and South region is the over 30 years

group (See Table 19). The smallest frequency of responses in the three groups is from the group teaching less than 1 year.

Table 19
Number of Years Teaching by Regional Group (n=340)

	Regional Group						
Years Teaching	Far N/S (*n*=18)	%	Center (n=121)	%	South (n=201)	%	Total
Less than 1 year	0	0	1	.8	7	3.5	8
1 to 5	6	33.3	22	18.2	20	10.0	48
6 to 10	2	11.1	13	10.7	31	15.4	46
11 to 15	2	11.1	11	9.1	24	11.9	37
16 to 20	2	11.1	13	10.7	21	10.4	36
21 to 25	3	16.7	8	6.6	22	10.9	33
26 to 30	1	5.6	14	11.6	31	15.4	46
Over 30	2	11.1	39	32.2	45	22.4	86

Role at school. Question 1.6 requested information about the role(s) that the rural teacher performed in the school. The options included: (a) being a teacher, (b) a principal, (c) performing both roles at the same time, and (d) others. This last option was divided into two more roles, teacher in charge, who performs similar tasks as the principal, and curriculum specialist. Of 341 responses the option of performing the roles of teacher and principal simultaneously obtained the largest number of responses (*n*=191) with a 56.0%. The second largest number of responses was from the group with the role of principal (*n*=84) with 24.6%. The group that performs only the role of teacher represented 14.7% (*n*=50) of the responses (See Table 20). The group that performs the role of teacher and curriculum specialist at the same time represented 4.7% (*n*=16) of responses which increases the number of teachers who have two roles at school (*n*=207). Since the number of students is small, this impact the number of teachers hired. Hence the fewer teachers there are in a school the more roles are assigned to them, as was

remarked by the interviewee Joseph who has two roles at school and is the only teacher: "We are teachers in charge, we are classroom teachers, we have to keep the school clean, we are custodians, we are also responsible for all."

Table 20
Role at School Sample Wise (n=341)

Role	Number of respondents	% of respondents
Teacher	50	14.7
Principal	84	24.6
Teacher and principal (or similar role)	191	56.0
Teacher and curriculum specialist	16	4.7

Roles at school were also identified according to regional group. The largest percentage of teachers working in two roles at school was from the South Group at 62.5%. The Far North/South group had the largest percentage of teachers only working in the teacher role (22.2%) (See Table 21).

Table 21
Role at School by Regional Groups (n= 341)

	Regional Group						
Role at School	Far N/S (*n*=18)	%	Center (*n*=122)	%	South (*n*=201)	%	Total
Teacher	4	22.2	14	11.5	32	15.9	50
Principal	4	22.2	38	31.1	42	20.9	84
Teacher and Principal	9	50.0	65	53.3	117	58.2	191
Teacher and Curriculum Specialist	1	5.6	5	4.1	10	5.0	16

Number of students taught. The next 5 questions refer to items involved in teaching, such as number of students taught, subjects, grades and others. Question 1.9.1 asks for the number of students taught weekly. Of 328 responses the largest group of responses is for the category teaching 1 to 25 students (*n*=219) at 66.8%. The second largest response group (*n*=55) was for the category teaching 26 to 50 students group with 16.8% (See Table 22).

Table 22
Number of Students Taught Weekly Sample Wise (n=328)

Students range	Number of respondents	% of respondents
1 to 25	219	66.8
26 to 50	55	16.8
51 to 100	34	10.4
101 to 150	7	2.1
151 to 200	3	.9
201 to 250	4	1.2
251 to 300	6	1.8

This result is related to what was presented in the literature review section, rural schools tend to have few students enrolled and it is possible to find schools having one or two students.

A subsequent similar analysis was performed based on each regional group. According to this, 69.2% of participants from the South group teach 1 to 25 students,

11.1% of participants from the North/South group teach from 251 to 300 students weekly (See Table 23).

Table 23
Number of Students Taught Weekly by Regional Group (n=328)

Students range	Regional Group						
	Far N/S (n=16)	%	Center (n=117)	%	South (n=195)	%	Total
1 to 25	11	68.8	73	62.4	135	69.2	219
26 to 50	2	12.5	19	16.2	34	17.4	55
51 to 100	1	6.2	17	14.5	16	8.2	34
101 to 150	0	-	2	1.7	5	2.6	7
151 to 200	0	-	1	.9	2	1.0	3
201 to 250	0	-	2	1.7	2	1.0	4
251 to 300	2	11.1	3	2.6	1	.5	6

Hours worked weekly. Question 1.9.2 requests respondents to identify the number of hours working weekly, the options including ranges from one to five minimum to 46 to 50 maximum. Of 325 responses, the largest response was from teachers who work 36 to 40 hours weekly (*n*= 152), representing 46.8% .The second largest response was from teachers who work 26 to 30 hours weekly (*n* = 35) at 10.8%. The lowest responses are found in the group of teachers who work 46 to 50 hours (See Table 24).

Table 24
Number of Hours Working Weekly Sample Wise (n= 325)

Hours	Number of respondents	% of respondents
1-5	14	4.3
6-10	19	5.8
11-15	10	3.1
16-20	20	6.2
21-25	17	5.2
26-30	35	10.8
31-35	25	7.7
36-40	152	46.8
41-45	30	9.2
46-50	3	.9

A similar analysis to identify the number of weekly work hours by regional groups was implemented. This analysis indicates that the Far North/South group present responses that range from 26 to 41 hours, while the South group presents responses that range from 1 to 50 hours; therefore, the three responses sample wise that range between 46 and 50 hours belong to the South group. In the case of the Center group, the range of responses is from 1 to 45 hours (See Table 25).

Table 25
Number of Hours Working Weekly by Regional Group

	Regional Group						
Hours	Far N/S (n=16)	%	Center (n=115)	%	South (n=194)	%	Total
1-5	0	-	7	6.1	7	3.6	14
6-10	0	-	8	7.0	11	5.7	19
11-15	0	-	8	7.0	2	1.0	10
16-20	0	-	6	5.2	14	7.2	20
21-25	0	-	6	5.2	11	5.7	17
26-30	4	25.0	13	11.3	18	9.3	35
31-35	1	6.2	10	8.7	14	7.2	25
36-40	7	43.8	42	36.5	103	53.1	152
41-45	4	25.2	15	13.0	11	5.7	30
46-50	0	-	0	-	3	1.5	3

A possible interpretation for the differences among the three groups is that schools in the South and Center have teachers who teach specific classes such as English as a Foreign Language and who teach few hours weekly. In the case of the Far N/S group it may be that teachers teach all the subjects.

Grades taught simultaneously. Question 1.9.3 asks participants to identify the number of grades they teach simultaneously in the classroom. The options given were: (a) 1 grade per classroom, (b) 2 grades per classroom, (c) and over 2 grades per classroom. Of 331 responses, the option referring to over 2 grades per classroom comprised the largest number of responses (*n*=156), representing 47.1 %. The other two options, 1 grade per classroom and 2 grades per classroom, represented 25.4% the former and 27.5% the latter. Overall, and considering the previous choices, the responses indicating a multigrade classroom was 74.6% (*n*=247) (See Table 26).

Table 26
Number of Grades taught Simultaneously Sample Wise (n=331)

	Number of respondents	% of respondents
1grade per classroom	84	25.4
2 grades per classroom	91	27.5
Over 2 grades per classroom	156	47.1

This result is consistent with the information presented in the literature review about multigrade classrooms being a common and distinctive characteristic of rural schools. A more detailed analysis of number of grades taught simultaneously across the three regional groups resulted in similar percentages in each category of responses (See Table 27).

Table 27
Number of Grades Taught Simultaneously by Regional Group (n=331)

	Regional Group						
Number of grades	Far N/S (n=17)	%	Center (n=113)	%	South (n=201)	%	Total
1grade per classroom	5	29.4	29	25.7	50	24.9	84
2 grades per classroom	4	23.5	35	31.0	52	25.9	91
Over 2 grades per classroom	8	44.1	49	43.4	99	49.3	156

Teaching assignment. Question 1.9.4 of the survey requested subjects to select their actual teaching assignments. The largest number of responses (*n* = 209) was found in the group of teachers teaching elementary to middle school grades, representing 60.9%. The second largest group of responses (*n*=55) was found in the group of teachers teaching only middle school grades (16.0%). The respondents that teach only one level, either elementary, middle or high school, comprise 27.4%.This question also identified 9.6% (n= 33) non-responses which are assumed to be teachers performing only administrative tasks (See Table 28).

Table 28
Grades Level (s) Taught at School Sample Wise (n=343)

Grade Levels	Number of Respondents	% of respondents
None	33	9.6
Elementary	36	10.5
Middle School	55	16.0
High School	3	.9
Elementary to Middle school	209	60.9
Middle to High School	4	1.2
Kinder to High School	3	.9

The researcher considered it of interest to identify the roles (teacher, principal, and teacher and principal) of participants who do not teach any grade level. A cross-analysis of the variables role at school and grades taught resulted in principals being the largest group that does not teach (*n*=19), the second largest group being the teacher and principal group (*n*=10) (See Table 29). It is possible that 10 participants misunderstood the question and selected this choice to indicate their role (principal) and their profession

(teacher). Consequently, it is assumed that these 10 participants are principals who do not teach. In the single case of the teacher who does not teach, the researcher reviewed the database and found that the teacher who had indicated this had just retired.

Table 29
Grades Level taught by Academic Role at School Sample Wise (n=341)

Grade Levels	Teacher (n=50)	Principal (n=84)	Teacher and Principal (n=191)	Teacher & C.P. (n=16)	Total
None	1	19	10	2	32
Elementary	11	3	21	1	36
Middle School	3	22	27	3	55
High School	0	2	0	1	3
Elementary to Middle school	34	36	131	7	208
Middle to High School	0	0	2	2	4
Kinder to High School	1	2	0	0	3

A similar analysis based on regional groups identified 72.2% of teachers from the Far North/South group teaching from elementary through middle school grades, while the South group taught all the grades levels (See Table 30). A possible explanation for this difference is that the larger population in the South compared the small one in the Far North/ South group, indicates less variability in students' grade levels.

Table 30
Grades Level Taught at School by Regional Group (n=343)

	Regional Group						
Grades levels	Far N/S (*n*=18)	%	Center (*n*=122)	%	South (*n*=203)	%	Total
None	2	11.1	13	10.7	18	8.9	33
Elementary	3	16.7	13	10.7	20	9.9	36
Middle School	0	-	19	15.6	36	17.7	55
High School	0	-	2	1.5	1	.5	3
Elementary to Middle School	13	72.2	74	60.7	122	60.1	209
Middle to High School	0		0		4	2.0	4
Kinder to High School	0		1	.8	2	1.0	3

Subjects taught. Question 1.9.5 asked about subjects taught, and respondents were given the option of multiple choices to select all the subjects they teach. Subjects included were Language, Science, History, Mathematics, English, Art, Sports and others. Of the 316 responses, the largest group of responses (*n* = 106) was the one teaching all the eight subjects, representing 30.9% of the total. The group teaching seven subjects was the second largest (*n* =59) with 17.2% of responses. The group of respondents teaching six subjects (*n*=25) represented 7.3%, while the group of respondents teaching five subjects (*n*=15) represented 4.4%. Groups of respondents teaching four subjects (*n*=20) represented 5.8%, the group of respondents teaching three subjects (*n*=22) represented 6.4%, and the group teaching two subjects (*n*=18) represented 5.2%, and the group of respondents teaching one subject (*n*=51) corresponding to a 14.9%. There were 27 respondents corresponding 7.9% who indicated they do not teach courses. The number of subjects taught happened in different combinations: for example, three subjects could be Language, History and Science or Math, Science and Language.

There were three questions concerning the demographics of the school. These questions referred to number of students, number of teachers and type of school administration.

Number of students enrolled. Question 1.7 asks respondents to select the number of students enrolled in the school. Of a total of 340 responses, the largest number of responses was for the category 1 to 50 students enrolled (n = 200) with 58.8%. The second largest number of responses was for the category 51 to 100 students enrolled (n=69) with 20.3%. The lowest number of responses came from the groups that include the ranges from 301 to 600 (See Table 31).

Table 31
Number of Students Enrolled at Sample Wise (n=340).

Number of students	Number of respondents	% of respondents
1-50	200	58.8
51-100	69	20.3
101-150	31	9.1
151-200	12	3.5
201-250	8	2.4
251-300	8	2.4
301-350	3	.9
351-400	3	.9
401-450	2	.6
501-550	3	.9
551-600	1	.3

A more detailed analysis was implemented to identify the distribution of students enrolled at school across the three regional groups. According to this, in the Far North/South group the largest number of responses was in the category 1 to 50 students enrolled (n=10) at 55.6%. The Center group presents students enrolled in all ranges

except 351 to 400. The South group does not present enrollment in the ranges between 401 to 450 and 551 to 600 (See Table 32). The Far/North South group has a smaller density population than the Center and South groups, which could impact student enrollment.

Table 32
Number of Students Enrolled by Regional Group (n=340)

Number of students	Regional Group						
	Far N/S (n=18)	%	Center (n=121)	%	South (n=201)	%	Total
1-50	10	55.6	62	51.2	128	63.7	200
51-100	4	22.2	31	25.6	34	16.9	69
101-150	0	-	11	9.1	20	10.0	31
151-200	0	-	7	5.8	5	2.5	12
201-250	0	-	2	1.7	6	3.0	8
251-300	2	11.1	2	1.7	4	2.0	8
301-350	0	-	2	1.7	1	.5	3
351-400	1	5.6	0	-	2	1.0	3
401-450	0	-	2	1.7	0	-	2
501-550	1	5.6	1	.8	1	.5	3

Indigenous students enrolled. Question 1.9 asked participants to identify the number of indigenous students enrolled in the school. Options to answer were given in ranges of 10, except for the group of 1 to 9 which included a range of 9, and this was because the zero option was part of the none category. Of 335 respondents, the largest number of responses was in the category of 1 to 9 indigenous students (*n*=127) with a 37.9% and the second largest response was for the category "none" (*n*=105) with 31.3%.

As far as the regional distribution of indigenous students enrolled at school, the Center group presents the highest percentage of responses in the none category (52.5%). The Far North/South and South group cover ranges over 70 indigenous students (See

Table 33). This result is consistent with the demographic data presented by the researcher in the literature review; the Far North/South and South groups have the largest proportion of indigenous people in their population.

Table 33
Indigenous Student Distribution by Regional Groups (n=335)

	Regional Group						
Indigenous Students	Far N/S (n=18)	%	Center (n=120)	%	South (n=197)	%	Total
None	2	11.1	63	52.5	40	20.3	105
1-9	8	44.4	44	36.7	75	38.1	127
10-19	2	11.1	8	6.7	17	8.6	27
20-29	2	11.1	1	.8	17	8.6	20
30-39	0	-	1	.8	8	4.1	9
40-49	0	-	2	1.7	8	4.1	10
50-59	1	5.6	0	-	6	3.0	7
60-69	0	-	1	.8	5	2.5	6
70-79	0	-	0	-	2	1.0	2
80-89	0	-	0	-	7	3.6	7
90-99	1	5.6	0	-	4	2.0	5
100-109	0	-	0	-	2	1.0	2
120-129	0	-	0	-	3	1.5	3
130-139	0	-	0	-	1	.5	1
170-179	0	-	0	-	1	.5	1
220-229	1	5.6	0	-	1	.5	2
Over 300	1	5.6	0	-	0	-	1

School administration. Question 1.9.6 asked participants to identify the administrative system that applies to their school. Options included, public-municipal (DAEM), public corporation, and private subsidized. Of a total 342 responses, largest number of responses is from the public-municipal category (DAEM) with a 73.7% (*n*=252). The second largest number of responses was the private subsidized category (*n*=62), representing 18.1%. The smallest number of responses is from the category public corporation (*n*=27) with a 7.9% (See Table 34).

Table 34
Type of School Administration Sample Wise (n=341)

Administration	Number of respondents	% of respondents
Public (DAEM)	252	73.7
Public Corporation	27	7.9
Private subsidized	62	18.1

An analysis of school administration per regional group identified differences in the number of responses for the private subsidized category. In the South group the private subsidized category obtained a 27.1% of responses (*n*= 55). In the same category the Far North/South and South group obtained 5.9% and 5.7% of responses respectively, (See Table 35).

Table 35
Type of School Administration by Regional Group (n=342)

	Regional Group						
Administration	Far N/S (n=17)	%	Center (n=122)	%	South (n=203)	%	Total
Public (DAEM)	13	76.5	103	84.4	136	67	252
Public Corporation	3	17.6	12	9.8	12	5.9	27
Private subsidized	1	5.9	7	5.7	55	27.1	63

Summary. This study obtained 343 responses to be used for analysis purposes. There were 15 questions posed in the online survey to identify demographic aspects of teachers and schools. The responses were analyzed sample wise and then according to the three regional groups Far North/South, Center, and South. The result of this analysis identified demographic characteristics, to be described next.

In terms of gender, 50.3% of the sample was male and 49.7% were female. Age was analyzed in association with gender, the largest number of responses (37.5%) was from the age group between 50 and 59 years old for both female and male groups. As far as the three regional groups, the largest number of responses for the age group 50 to 59 (38.9%) was located in the South group. The largest number of responses for the category less than 30 (*n*=4) at 22.2% was located in the Far North/South group.

It was of interest of the researcher to identify the type of school (urban or rural) where the teachers had attended primary education. The results indicate that 62.2% of the sample had attended rural schools while 37.8% had attended urban schools. As far as the schools administrative locations where teachers were working at the moment of taking the survey, there were responses from every administrative location, the largest

response coming of the locations from the South group (58.9%) and the smallest response from the locations from the Far North/South Group (5.4%).

Another demographic item identified was the number of years that teachers had been teaching in rural schools. The results indicate that 25.3% had been working for over 30 years, and 2.4% had worked less than 1 year. In relation to the three regional groups, in the Far North/South group, 33.3% had worked between 1 to 5 years, in the Center group 32.2 % had worked over 30 years, and in the South group, 22.4% had worked over 30 years. Apart from the years of teaching experience, it was also important to identify the role that teachers have in their schools. The results indicate that 14.7% of teachers have the responsibility of only teaching, 24.6% have the responsibility to be only principals, 56% have the responsibility to be teachers and principals, and 4.7% have the responsibility of being teachers and curriculum specialists. This indicates that 60.7% of the respondents have two roles at school. This same analysis across the three regional groups determined that in the Far North/South group 50.0% of respondents work as teacher and principal. In the Center, group 53.3% work as teacher and principal and in the South group 58.2% work as teacher and principal.

The next questions identified the number of hours worked per week, number of subjects taught and grades taught simultaneously. Sample wise 46.8% of respondents indicate that they work between 36 to 40 hours weekly. In relation to the regional groups the same tendency continues, expect that the Far North/South group does not present responses in the categories from 1 to 25 hours, unlike the Center and South group. In relation to teaching grades simultaneously, the sample wise responses indicate that

47.1% of the teaching time is spent with over 2 grades per classroom. A similar result comes from the regional groups with the Far North/South having 44.1% in the same multigrade category, the Center group having a 43.4%, and the South group 49.3%. Concerning the grades taught sample wise 60.9% of respondents teach grades between elementary and middle school, and the same tendency is found across the three regional groups. The Far North/South group has a 72.2% of respondents teaching grades between elementary and middle school with no responses for high school and middle school. In relation to subjects taught, 30.9% of the total sample teach eight subjects (Language, Science, History, Mathematics, English, Art, Sports and others), and 5.2% teach two subjects.

Other aspects identified in the survey are related to the number of students enrolled, number of indigenous students enrolled, teachers in school as well as the type of administration. In relation to students enrolled 58.8 % of respondents sample wise indicated there are from1 to 50 students enrolled in their schools. The same tendency applies to the three regional groups, with the Far North/South group having 55.6% responses in the 1 to 50 students enrolled category, the Central group having 51.2%, and the South group having 63.7% of responses in the 1 to 50 students enrolled category. The survey also asked to report the number of indigenous students enrolled at school, and the results indicate that 37.9% of responses sample wise are located in the 1 to 9 indigenous students category, while 31.3% are located in the none category. In relation to the three regional groups, the South group presents responses in all the ranges that

cover from none to 229 and the Far North/South presents responses in the largest range over 300.The Center group displays no responses from ranges 70 to over 300.

In relation to the number of teachers working at school, 59.1% of respondents were situated in the 1 to 5 category, while the smallest percentage was for the 26 to 30 and 31 to 35 teachers with a .3% each. The three regional groups shared similar tendencies, the Far North/South group had 55.6% of responses in the 1 to 5 category, the Center group had 52.6% of responses in the same category, and the South group had 63.4% of responses in the 1 to 5 number of teachers' category. Finally, in relation to school administration, 73.7 % of respondents sample wise selected the public (DAEM) system of administration. The three regional groups presented the same tendency, yet they differ in the private subsidized category where the South group has a 27.1% of responses while the Far North/South group has a 5.9% and the Center group has a 5.7%.

Research Question One

What are the levels of teachers' preferences and needs for topics and methods of delivery that are identified by rural Chilean teachers for their continued professional development?

This question was answered in two parts, the first related to appropriateness of methods of delivery and the second related to needs for topics

Methods of delivery. In the survey question 2.2 participants were asked to answer the question "In your opinion, how appropriate these methods would be for implementing Teachers' Professional Development for your rural setting?." Seven options of delivery methods were presented: (a) "online professional courses," (b)

"educational websites," (c) "regularly scheduled online collaboration meetings with teachers from other schools," (d) "live professional university courses," (e) "professional conferences," (f) "mentorship from an experienced teacher," and (g) "training seminars." These methods were included based on the information about professional teacher training available from the Chilean Ministry of Education for teachers in Chile, this with the exception of method "c" that is related to online learning communities' strategies. Participants were asked to rate these methods according to the following Likert scale criteria: *not appropriate* (1 to 25), *somewhat appropriate* (26 to 50), *appropriate* (51 to 75), and *very appropriate* (76 to 100). The technical format chosen to present this question in the survey was through a slider, which allowed recording the choices for each criterion and at the same time presented numeric continuous values. This format was chosen since it allows capturing variations within the same criteria of response (See Figure 3).

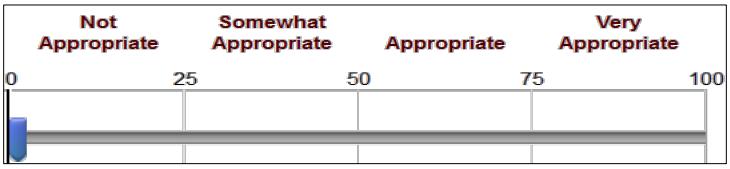


Figure 3 Slider recording Likert scale criteria and numeric ratings.

A descriptive analysis was implemented sample wise to identify tendencies and variability in ratings. The results indicate that participants considered on average the delivery method "live professional university courses" as *very appropriate* (76 to100),

while the rest of the methods were rated on average as *appropriate* (51 to 75) (See Table 36).

Table 36
Descriptive Statistics for Methods to Deliver Teacher Professional Development Sample Wise

Delivery Methods	Mean	S.D.
Live professional university courses	77.26	27.11
Conferences	57.76	26.03
Online courses	62.80	26.45
Educational websites	72.10	24.27
Mentorship from an experienced teacher	68.58	24.38
Training seminars	69.75	25.06
Online meetings[a]	69.98	25.23

Note: not appropriate= 1-25, *somehow appropriate*= 26-50, *appropriate* = 51-75, *very appropriate*= 76-100. [a] Regularly scheduled online collaboration meetings with teachers from other schools

A second analysis of this question was performed based on the assumption that regional location could affect the preferences of the participants; the sample was split in three regional locations: Far North/South, Central, and South groups. The average ratings for all methods of delivery concentrated in the categories *appropriate,* (50 to 75) and *very appropriate* (76 to 100) (See Table 37). The method of delivery "live professional university courses" is considered on average v*ery appropriate* among all three regional groups, while the other six methods are considered *appropriate* on average. Standard deviations were large across all groups indicating the existence of disperse ratings for delivery method appropriateness.

Table 37
Descriptive Statistics for each Delivery Method by Regional Groups

Type of Delivery method	Regional Groups					
	Far N/S (n = 18)		Center (n = 120)		South (n = 194)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Live professional university courses	84.33	23.25	77.53	28.60	76.44	26.52
Professional conferences	60.00	26.14	58.97	26.39	56.81	25.89
Online professional courses	65.59	28.62	64.22	24.83	61.68	27.28
Educational websites	66.68	27.76	71.16	26.26	73.11	22.71
Mentorship from an experienced teacher	67.50	28.28	71.67	25.40	66.72	23.24
Training seminars	73.78	29.37	71.35	25.28	68.40	24.54
Online meetings	64.76	26.68	71.90	26.08	69.25	24.58

Note: not appropriate= 1-25, *somehow appropriate*= 26-50, *appropriate* = 51-75, v*ery appropriate*= 76-100. [a] Regularly scheduled online collaboration meetings with teachers from other schools

Boxplots were implemented to observe how disperse ratings for each method of delivery across regional groups were (See Figure 4). The medians for preferences differ slightly among the regional groups. This can be seen in the "live professional university courses" boxplot where the rating given by the Far North/South group concentrate in the *very appropriate* criteria, while the Center and South present ratings in a more disperse range from *not appropriate* to *very appropriate*. Although it is expected to have differences, due to sampling error, it is necessary to check if the mean differences observed are due to differences between the sample and the population or it reflects genuine differences between the regional groups.

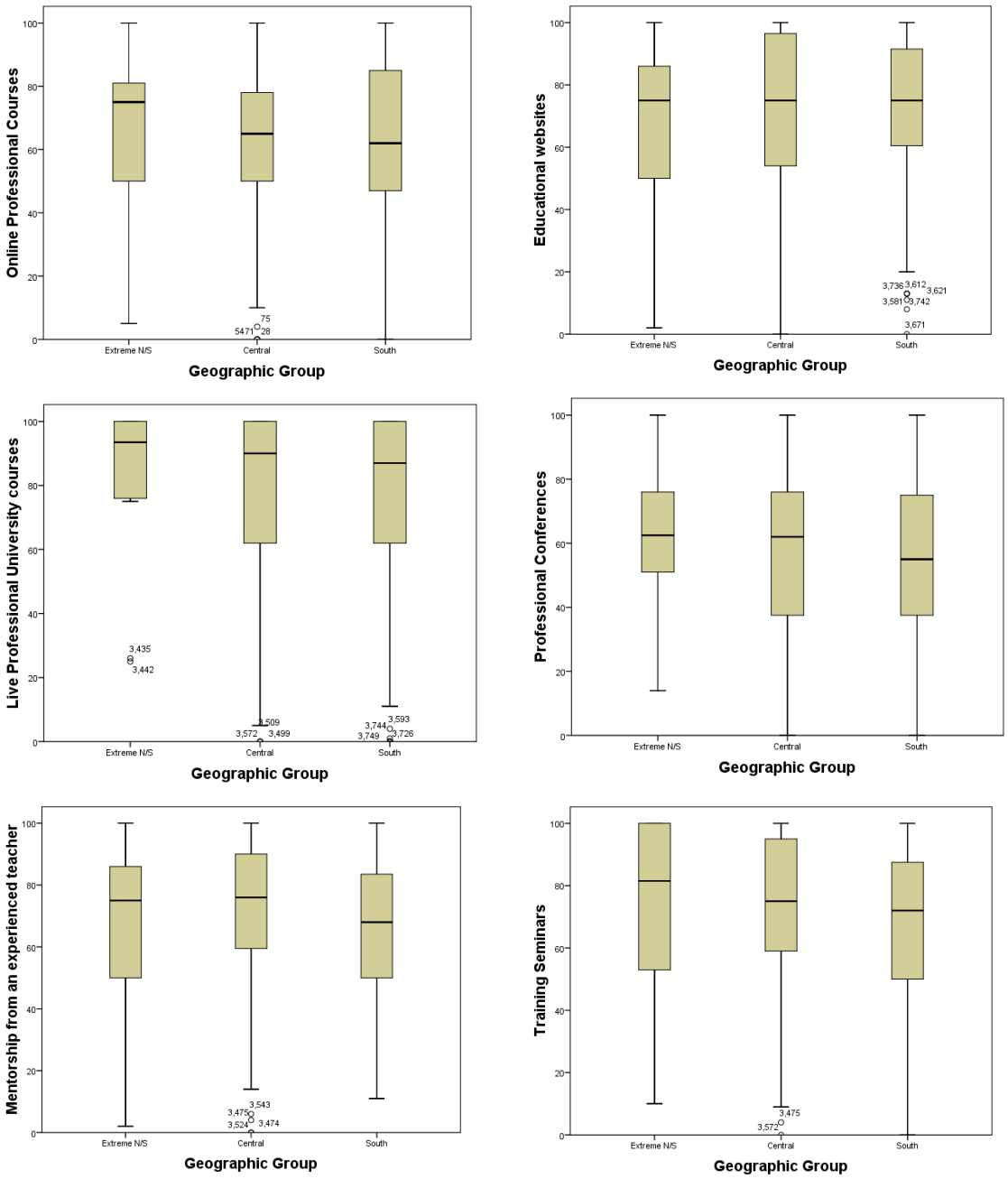


Figure 4 Differences in rating appropriateness for each delivery method

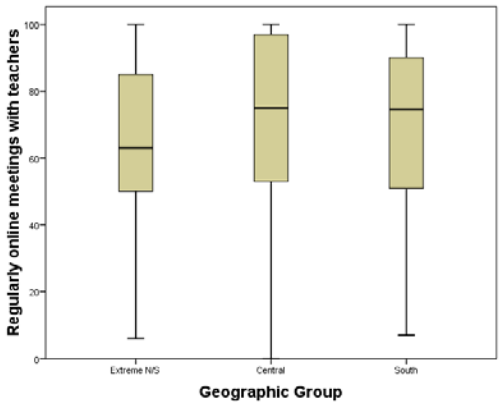


Figure 4 Continued

In order to test for mean differences for each of the seven delivery methods across the three regional groups, a One-Way ANOVA test was implemented. This test helped to compare how much the regional groups preferences differed from each other to how much variability is within each group. A hypothesis of no difference among the means for preferences the methods of delivery across the three regional groups was established. Then, the null and alternative hypotheses for each group were:

H_o: $\mu 1=\mu 2=\mu 3$

H_1: at least one of the means is different from the others.

A second step in this analysis was to test the ANOVA's assumption of homogeneity of variance. A Levene's test of homogeneity of variance was implemented in order to assess whether the population variances for the groups were significantly different from each other. Under the null hypothesis of no difference between group variances Levene's test resulted in $p> 0.5$ indicating that there is no significant difference between groups variance, therefore the assumption of homogeneity of variance for this data was not violated. After testing the assumption a One-Way

ANOVA test was performed, this did not reveal significant differences among the groups, the null hypothesis of no difference is retained, there was no substantial evidence of differences between preferences for method of delivery among the three regional groups, and consequently the differences observed are assumed to be related to personal differences of participants.

A final analysis was run in order to determine if the delivery methods preferences were related to one another either positively, where as level of preferences increases for one method it simultaneously increases in another method, or negatively, where as the level of preferences decreases for one delivery method it simultaneously increases for another one. For this purpose a Pearson correlation (r) test was run between the means of these preferences, the results indicate the existence of two dimensions, one formed by online delivery methods and another by face-to-face delivery methods.

For the first dimension the delivery method "educational websites" produced a significant correlation with "online courses" $\alpha = .05$ (r (321) = .61, $p < .05$) which indicates a positive moderate tendency to rate both methods similarly, although there are cases where a participant rated highly one method and low the other one. The correlation between "online professional university courses" method and "regularly scheduled online collaboration meetings with teachers from other schools" resulted significant at $\alpha = .05$ (r (318) = .59, $p < .05$) and "educational websites" correlated with "mentorship from an experienced teacher" resulted in at $\alpha = .05$ (r (317) = .47, $p < .05$) a moderate to low positive correlations (See Figure 5).

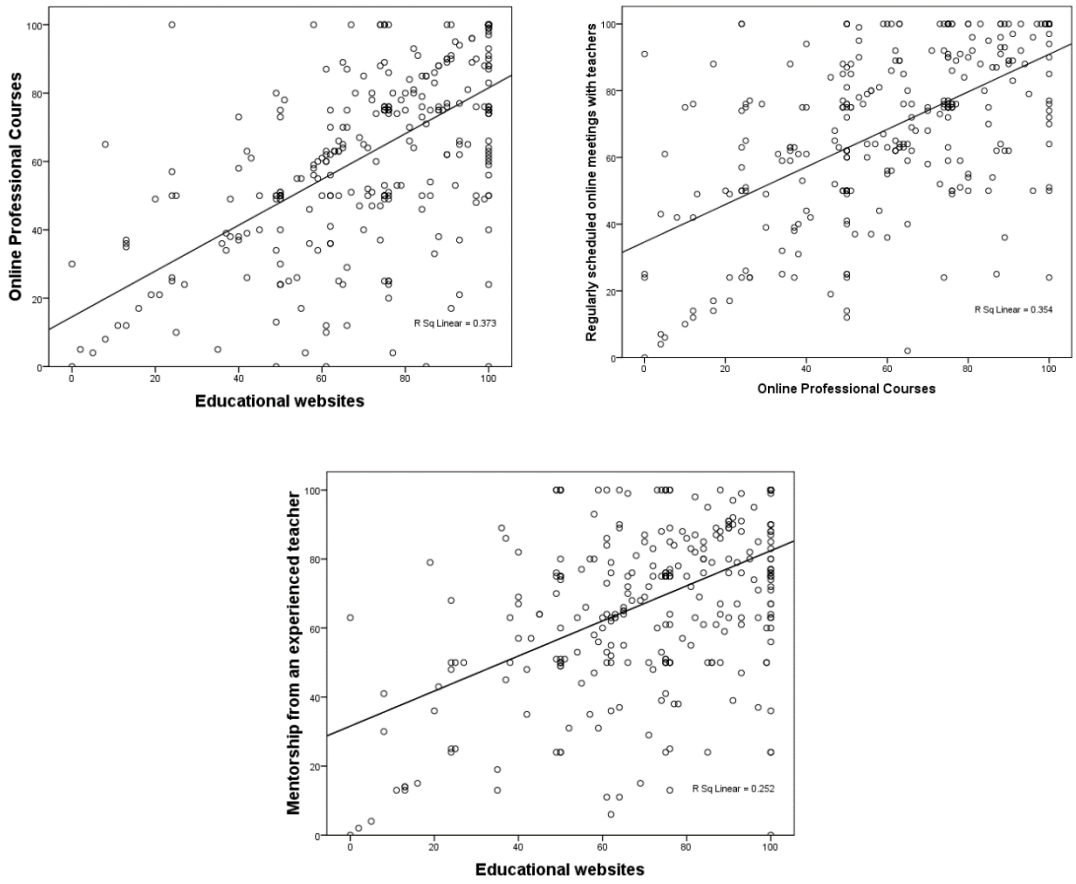


Figure 5 Correlation between online delivery methods.

The second dimension identified in this correlation includes the face-to-face delivery methods: "live professional university courses," "professional conferences," and "training seminars." The correlation between "live professional university courses" and "professional conferences" was moderate positive and significant relationship at $\alpha = .05$ (r (321) = .54, $p < .05$), and with "training seminars" significant low positive at $\alpha = .05$ (r (324) = .48, $p < .05$) (See Figure 6). This indicates that it is possible to find cases that consider "live professional university courses" *very appropriate* and at the same

time consider “training seminars” as *not appropriate*, *somehow appropriate*, *appropriate*, and *very appropriate.*

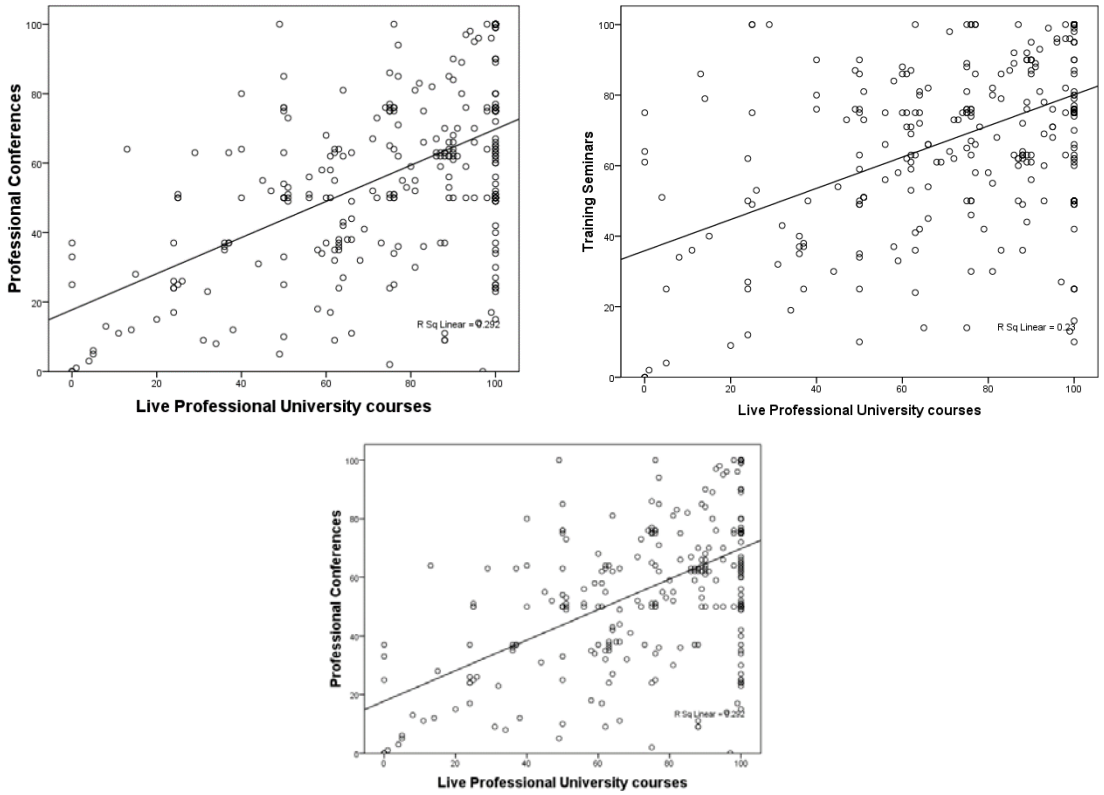


Figure 6 Correlation between face-to-face delivery methods.

When “online professional courses” method was correlated with the delivery method “live professional university courses” the resulting correlation was *r*= .023, this was not significant at α = .05 (*r* (321) =.023, *p*> .05. This positive correlation is low; therefore, participants who rated one method high rated the other one low presenting more variation in ratings (See Figure 7).

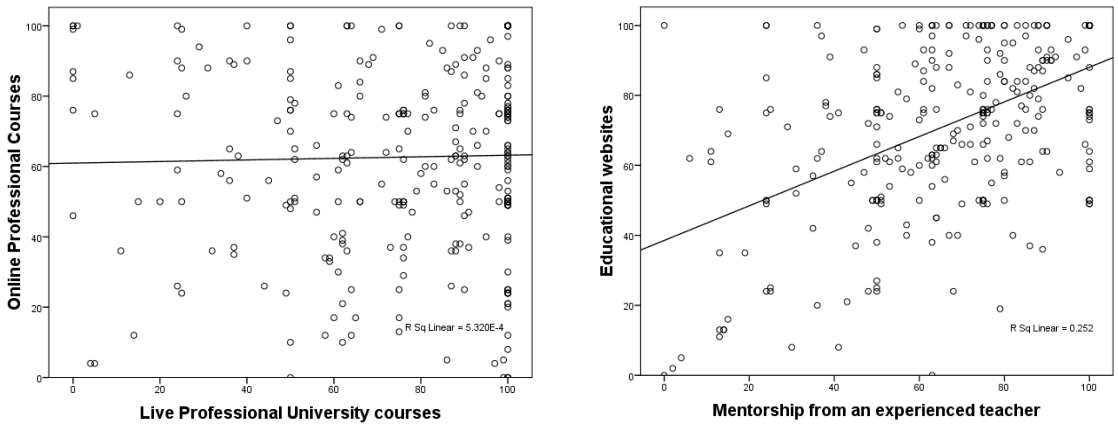


Figure 7 To the left, low correlation between online and face-to-face delivery method. To the right, correlation between methods of delivery that are more personalized and independent.

Preferences for "online professional courses" do not indicate necessarily a preference for face-to-face courses although there are exceptions to this. It is important to note the correlation between "mentorship" and "educational websites," this since "mentorship" can be a face-to-face method. This could also indicate a preference for personalized activities compared to group activities when rating the appropriateness of delivery method for teacher professional development.

Topics. In relation to the second part of this research question related to topics needed to be integrated in teacher professional development for rural teachers, participants were asked the following question: "In your opinion, how necessary is it to include the topics listed below into teachers' professional development to improve your teaching practices?" The choices of topics presented were: (a) "students' performance assessment," (b) "classroom management," (c) "needs of students with disabilities," (d) "parent and community involvement," (e) "dealing with students and family issues," (f) "teaching English as a foreign language," (g) "teaching an indigenous language," and (h) "strategies to work with teachers from other schools using Internet." The participants were asked to rate these choices using a Likert scale with the following criteria: *not necessary* (1 to 25), *somewhat necessary* (26 to 50), *necessary* (51 to 75), and *very necessary* (76 to 100). As in the previous question about delivery methods, the technical format chosen in the survey was a slider that allowed recording the choices for each criterion and the numeric continuous values.

A first approach in the analysis included to identify the general tendencies for topic needed in the total sample of participants. The topics "teaching an indigenous language" and "strategies to work with teachers from other schools using Internet" were rated on average as *necessary* (51 to 75), the rest of the topics were considered *very necessary* (76 to 100) (See Table 38).

Table 38
Descriptive Statistics for Preferences for Topics Sample Wise

Topics	Mean	S.D.
Stud performance assessment*	85.40	17.38
Classroom mgmt*	85.35	17.28
Needs student from different cultural background	81.78	20.30
Needs of students with disabilities	86.86	17.07
Parent and community involvement	86.07	16.07
Dealing with student and family issues	82.75	19.15
Teaching English as a foreign language	80.02	19.97
Teaching indigenous language	66.98	26.44
Strategies to work with teachers from other schools	74.49	23.61

Note$_2$*: not necessary*= 1-25, *somehow necessary*= 26-50, *necessary* = 51-75, *very necessary*= 76-100
* Classroom Mgmt =Classroom Management
* Stud performance assessment= Student's performance

A second approach to this questions consisted of splitting the sample according to regional location, this was based on the assumption regional location could affect the preferences of the participants; the groups were Far North/South, Central, and South. Topics were rated on average between *necessary* (50 to 75) and *very necessary* (76 to 100) across the three groups (See Table 39).

Table 39
Descriptive Statistics for Preferences for Topics by Regional Groups

	Regional Groups					
	Far N/S (n = 18)		Center (n = 120)		South (n = 200)	
Topics Needed	Mean	S.D.	Mean	S.D.	Mean	S.D.
Student assessment performance	91.94	11.04	85.88	17.53	84.52	17.68
Classroom mgmt.*	82.17	21.64	86.34	15.81	85.03	17.76
Needs student from different cultural background	85.11	17.88	81.30	20.56	81.78	20.41
Needs of students with disabilities	92.39	10.82	87.45	15.78	86.01	18.20
Parent and community involvement	86.78	17.20	87.41	14.33	85.19	16.96
Dealing with student and family issues	84.11	22.07	85.52	15.94	80.90	20.52
Teaching English as a foreign Language	84.65	15.96	82.06	18.50	78.35	21.03
Teaching indigenous language	74.78	24.00	61.52	27.32	69.65	25.62
Strategies to work with teachers form other schools using Internet	72.50	23.34	75.36	24.38	74.14	23.27

Note: not *necessary*= 1-25, *somehow necessary*= 26-50, *necessary* = 51-75, *very necessary*= 76-100
Classroom Mgmt =Classroom Management

According to table 39, the topics "teaching indigenous language" and "strategies to work with teachers from other schools using Internet," were rated as *necessary* (51 to 75) across the three regional groups, while the rest of the methods were rated as *very necessary* (76 to 100) in all the groups. A more detailed observation of the distribution and dispersion of the ratings for all the topics can be seen in the boxplots in Figure 8. These graphics show that for the Far North/South group in the case of "students' performance assessment" and "needs of students with disabilities" 100% of the ratings are located in the *very necessary* (76 to 100). For the Center and South groups the ratings for these two topics range from *somehow necessary* and *necessary*. The topic "parent

and community involvement" does not present ratings in the category *not necessary (*1 to 25).

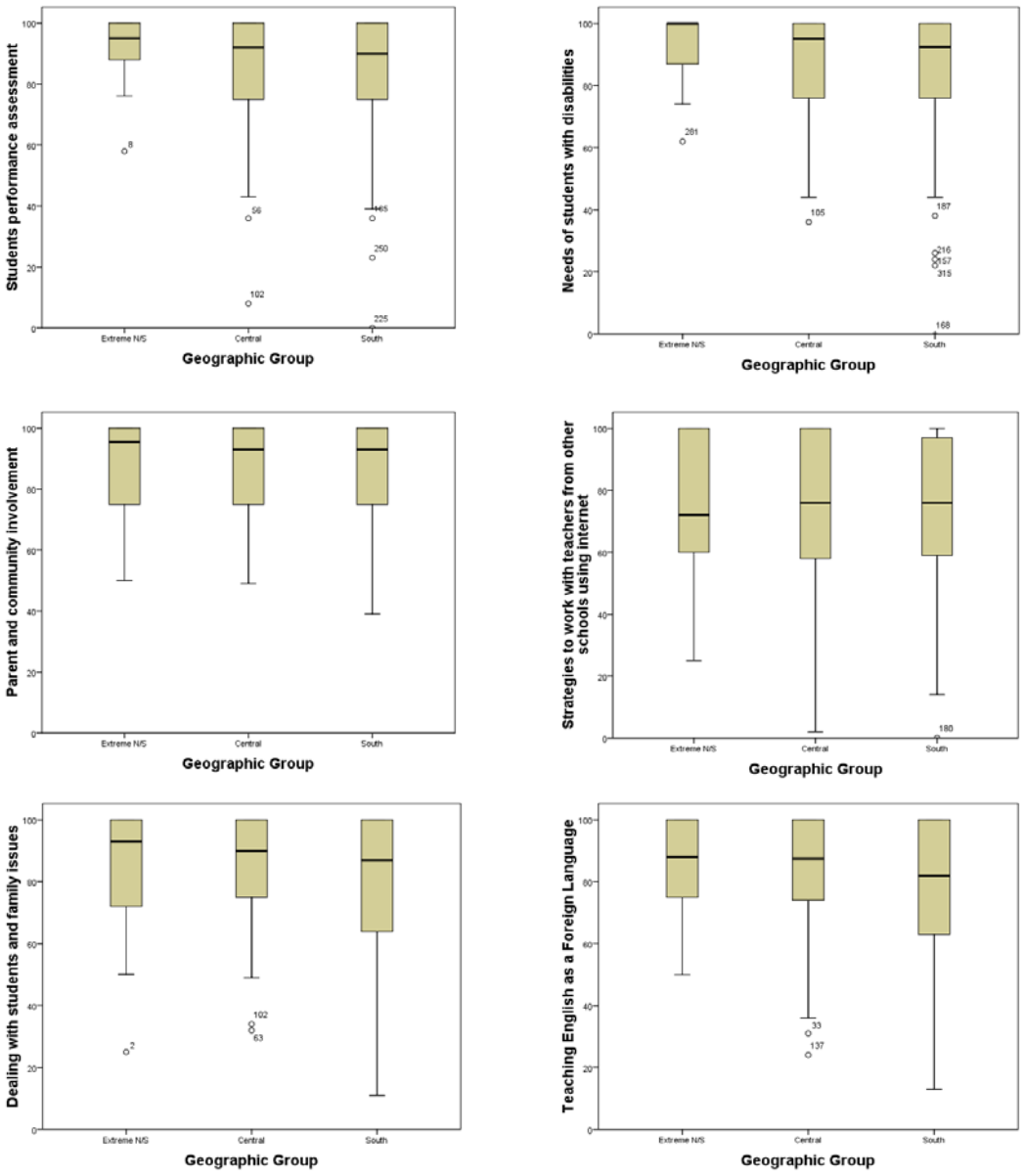


Figure 8 Distribution of ratings given to the need of each topic across all regional groups.

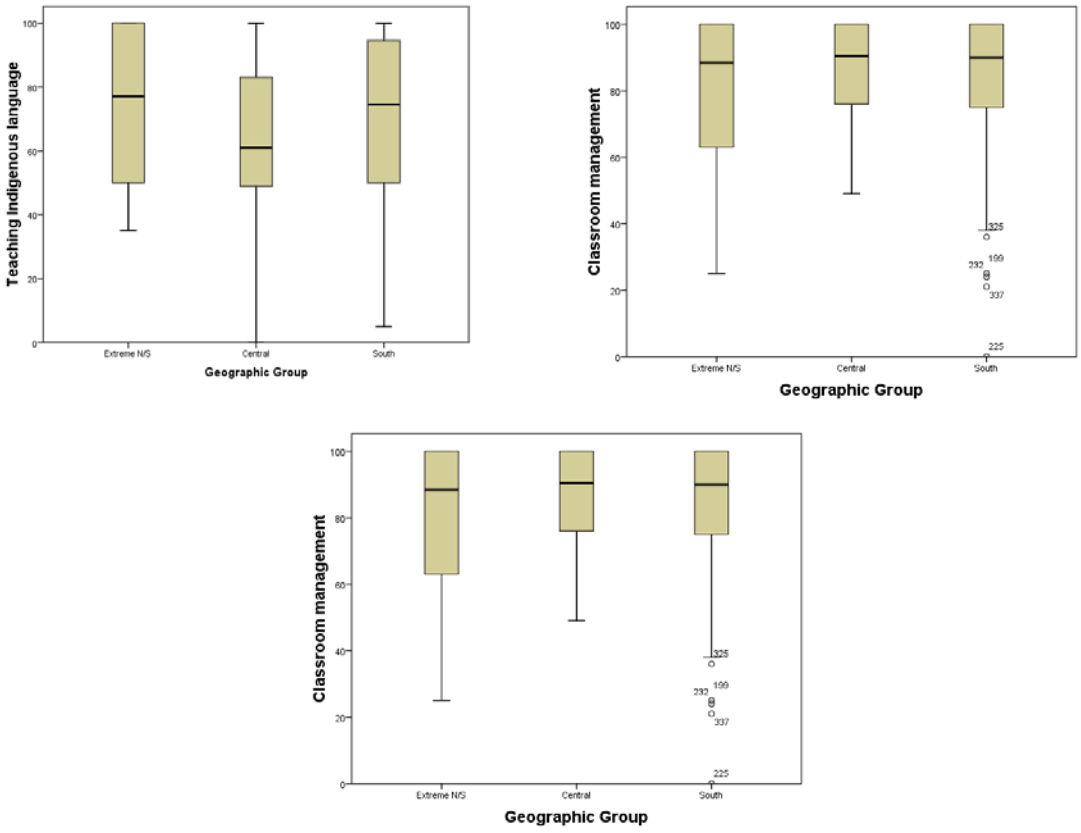


Figure 8 Continued

The range of ratings differs from one regional group to the other one. In order to measure the amount of variability found in needs for topics that can be attributed to differences among the three regional groups, a One-Way ANOVA test was implemented. This test allows determining if a significant difference exists among the topics with regard to regional location. A hypothesis of no difference among the means of need for each of the topics across the three regional groups was established. Then, the null and alternative hypotheses for each group were:

H_o: $\mu 1=\mu 2=\mu 3$

H_1: at least one of the means is different from the others.

ANOVA's homogeneity of variance assumption was tested through Levene's test in order to assess whether the variances for the groups were significantly different from each other. Under the null hypothesis of no difference between group variances, Levene's test resulted in $p > 0.5$ for six out of the nine topic groups. For the topics "students performance assessment," "dealing with students and family issues," and "parent and community involvement," Levene's test resulted in $p < .05$, therefore the null hypothesis of homogeneity of variance is rejected and it is concluded that the variance of these groups respect the others are not similar.

After testing this assumption a One-Way ANOVA test was performed, this revealed significant differences in the rating of the topic "teaching indigenous language" (F (2, 321) = 4.35, $p < .05$). The null hypothesis of no mean differences is rejected and it is assumed that the differences in rating the necessity for this topic are result of random sampling error and regional group membership. A Tukey HSD Post Hoc test was used for multiple comparisons among groups. A significant result was found between the South and Central group. This is consistent with demographic data where the largest number of indigenous population is located in the South group and the smallest number is located in the Center group.

In order to identify the relationship between the topics needed, a Pearson correlation (r) test was performed. This test helps to identify the relationship between variables and the degree of strength of the relationship. The relationship between topics needed is positive among all of them; however, the strength of the relationship varies among topics. In general topics that refer to classroom and student affairs have a

moderate correlation, while those topics related to academic development present a low correlation. The correlation between the cases in topic "needs of students with disabilities" and the cases in topic "classroom management" produced a significant correlation at α = .05 (r (333) = .52, p< .05). When "needs of students with disabilities" was correlated with "needs of students from different cultural background" produced a significant correlation at α = .05 (r (335) = .51, p< .05) and with the topic "dealing with family issues" correlation was significant at α = .05 (r (333) = .51, p< .05) (See Figure 9).

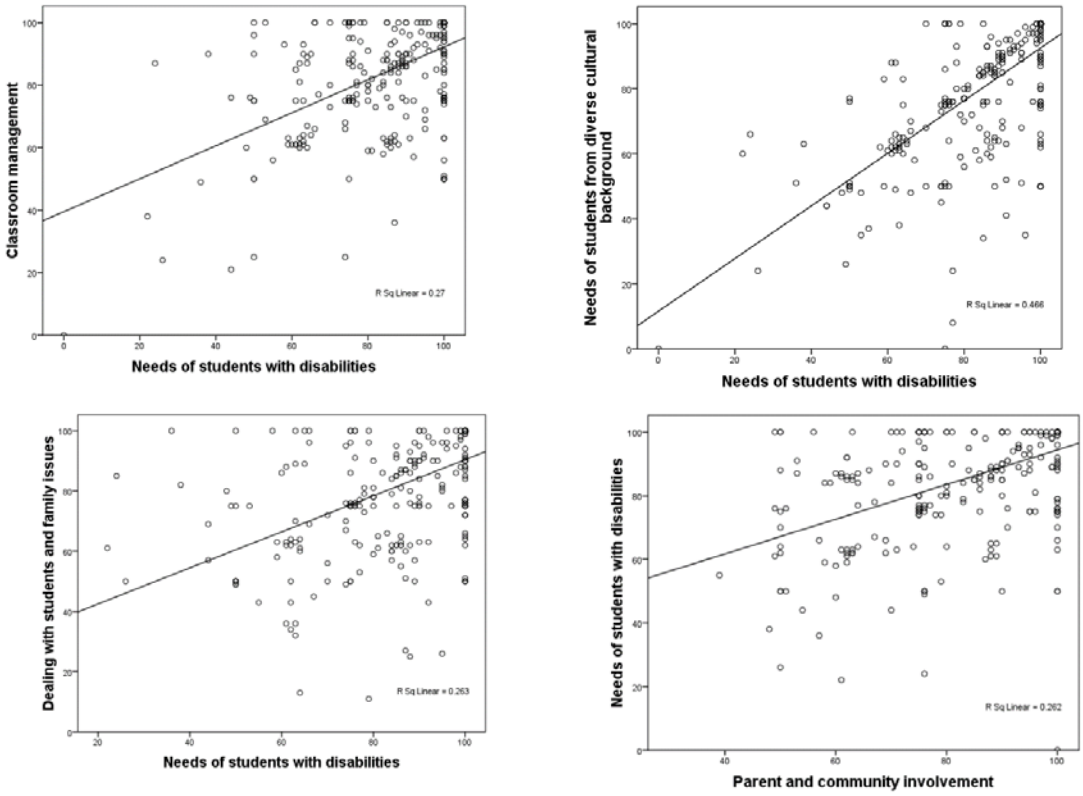


Figure 9 Scatterplots showing the relationship of topics related to students and family.

The correlation between the cases in topic "teaching English as a foreign language" with the cases in topic "strategies to work with teachers from other schools using Internet" produced a significant correlation at α = .05 (r (323) = *.36*, p< .05). The correlation between the cases in the topics "needs of students from diverse cultural background" and the cases in "strategies to work with teachers from other schools using Internet" produced a significant correlation α = .05 (r (331) = *.38*, p< .05) (See Figure 10). These are low positive correlations, therefore, it is possible than in some cases the need for one topic also results in a similar need for another, however, there are some cases where one topic is rated as *very necessary* and another topic is rated as *not necessary*.

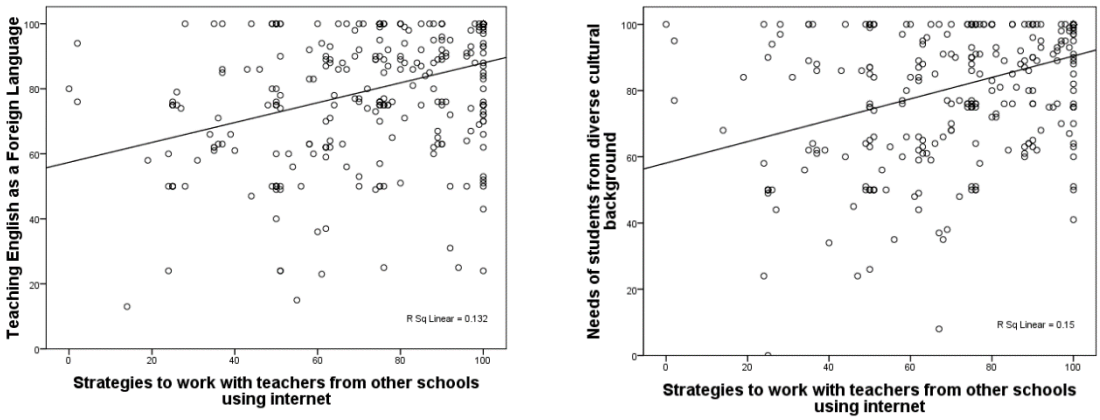


Figure 10 Scatterplots showing the relationship of academic topics.

Summary. What are the levels of teachers' preferences and needs for topics and methods of delivery that are identified by rural Chilean teachers for their continued professional development?

Methods of delivery. Participants in the study were asked to rate the appropriateness of the following seven types of teacher professional development delivery methods: (a) "online professional courses," (b) "educational websites," (c) "regularly scheduled online collaboration meetings with teachers from other schools", (d) "live professional university courses," (e) "professional conferences," (f) "mentorship from an experienced teacher," and (g) "training seminars." A descriptive analysis was implemented to identify tendencies and variability in ratings sample wise. Among the seven methods, presented "live professional university courses" was considered on average *very appropriate*, while the rest of the methods were considered on average *appropriate*. A second analysis of this question was performed based on the assumption that regional location could affect the preferences of the participants, therefore the sample was split into three groups: Far North/South, Central, and South regional groups. Among all the three groups, the method of delivery "live professional university courses" is considered on average *very appropriate*, while the other six methods are considered *appropriate* on average. Standard deviations were large across all groups indicating the existence of disperse ratings for delivery method appropriateness. In order to test for mean differences for each of the seven delivery methods across the three regional groups, a One-Way ANOVA test was implemented, this test did not reveal significant differences among the groups, the null hypothesis of no difference is retained, there was no substantial evidence of differences between preferences for method of delivery due to geographic location among the three regional groups, consequently the differences observed are assumed to be related to personal

differences of participants. A final analysis was run in order to determine if the delivery methods preferences were related to one another. For this purpose a Pearson correlation (r) test was run, the results of it indicate the existence of two dimensions, one formed by the online delivery methods "online professional courses", "educational websites" and "regularly scheduled online collaboration meetings with teachers from other schools." The other dimension was formed by face-to-face professional delivery methods, "live professional university courses," "professional conferences," "mentorship from and experienced teacher" and "training seminars." These two dimensions presented a low significant correlation with each other; however, the delivery method "mentorship from an experienced teacher" presented moderate significant correlation with the dimension "online delivery methods."

Topics. Participants in the study were asked the following question: "In your opinion, how necessary is it to include the topics listed below into teachers' professional development to improve your teaching practices?" The choices of topics presented were: (a) "students' performance assessment," (b) "classroom management," (c) "needs of students with disabilities," (d) "parent and community involvement," (e) "dealing with students and family issues," (f) "teaching English as a foreign language," (g) "teaching an indigenous language," and (h) "strategies to work with teachers from other schools using Internet." A descriptive analysis was implemented sample wise to identify tendencies and variability in ratings. The topics "teaching an indigenous language" and "strategies to work with teachers from other schools using Internet" were rated on average as *necessary*, the rest of the topics were considered on average *very necessary*.

A second approach to this questions consisted of splitting the sample according to regional location, this was based on the assumption that regional location could affect the preferences of the participants; the three groups were Far North/South, Central, and South groups. The topics "teaching an indigenous language" and "strategies to work with teachers from other schools using Internet," were rated on average as *necessary* across the three regional groups, while the rest of the methods were rated on average as *very necessary* in all the groups. The topic "parent and community involvement" does not present ratings in the category *not necessary* in any of the groups.

In order to determine if the differences in ratings could be impacted by regional location a One-Way ANOVA test was performed, this revealed significant differences in the need for "teaching indigenous language" topic group (F (2, 321) = 4.35, p< .05). The null hypothesis of no mean differences is rejected and it is assumed that the differences in rating the need for this topic are result of random sampling error and regional group membership. A Tukey HSD Post Hoc test was used for multiple comparisons among groups. A significant result was found between the South and Central group. This is consistent with demographic data where the largest number of indigenous population is located in the South group and the smallest number is located in the Center group.

In order to identify the relationship between the topics needed, a Pearson correlation (r) test was performed. The correlation between the cases in topic "needs of students with disabilities" and the cases in topic "classroom management" produced a significant correlation at $\alpha = .05$ (r (333) = .52, p< .05). When "needs of students with disabilities" was correlated with "needs of students from different cultural background"

produced a significant correlation at α = .05 (r (335) = .51, p< .05) and with the topic "dealing with family issues" correlation was significant at α = .05 (r (333) = .51, p< .05).

The correlation between the cases in topic "teaching English as a foreign language" with the cases in topic "strategies to work with teachers from other schools using Internet" produced a significant correlation at α = .05 (r (323) = *.36*, p< .05). The correlation between the cases in the topics "needs of students from diverse cultural background" and the cases in "strategies to work with teachers from other schools using Internet" produced a significant correlation α = .05 (r (331) = *.38*, p< .05).

Research Question Two

Are the principles of adult learning paradigm for the design of teachers' professional development represented in the preferences and opinions of teachers in Chile?

Participants were asked the following question: "How important is it to you that these programs offer the following opportunities and/or activities?"

Opportunities and activities. The options to answer this questions are based on the principles of adult learning paradigm: (a) "to collaborate with other teachers,"(b) "to learn topics related to my school and grade needs," (c) "to learn experientially," (d) "to learn practical strategies and ideas that will be immediately applicable," (e) "to learn through experiences that involve my perspectives and values," (f) "to extend the training through follow up activities that include practice of the content and techniques," and (g) "to reflect on my practices with other teachers." Participants were asked to rate these options as *not important* (1 to 25), *somehow important* (26 to 50), *important* (51 to 75)

and *very important* (76 to 100). The technical format for this question was a slider that allowed recording the criteria selected and the numeric continuous value.

A descriptive analysis was implemented sample wise in order to obtain the general tendencies and variability of ratings given to these activities and opportunities. All activities were rated on average as *very important* (76 to 100) (See Table 40).

Table 40
Descriptive Statistics for Opportunities and Activities Sample Wise

Opportunities and Activities	Mean	S.D.
Collaborate w/ other teachers	82.02	19.01
Learn topics related to my school and grade needs	85.50	17.27
Learn experientially	86.42	17.27
Learn strategies and ideas that will be applied immediately	89.49	14.85
Learn through experiences that involve teachers perspectives and values	87.23	15.71
Extend the training	86.33	17.13
Reflect on practices with other teachers	88.19	16.95

Note: not important= 1-25, *somehow important*= 26-50, *important* = 51-75, *very important*= 76-100

A second analysis of this question was performed based on the assumption that regional location could affect the preferences of the participants; the sample was split in three regional locations: Far North/South, Central, and South groups. The average rating given by the regional groups to opportunities and/ or activities was *very important* (76 to 100) (See Table 41).

Table 41
Descriptive Statistics for Opportunity and Activity by Regional Groups

Opportunities and Activities	Regional Groups					
	Far N/S (n = 18)		Center (n = 121)		South (n = 198)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Collaborate w/ other teachers	80.00	22.72	83.69	18.47	81.17	19.02
Learn topics related to my school and grade needs	84.61	19.54	86.26	17.98	85.11	16.67
Learn experientially	94.11	8.73	87.15	18.09	85.26	17.19
Learn strategies and ideas that will be applied immediately	95.00	8.00	90.03	15.02	88.64	15.15
Learn through experiences that involve teachers perspectives and values	91.11	15.78	88.42	15.47	86.15	15.82
Extend the training	85.94	19.64	87.14	16.78	85.88	17.17
Reflect on practices with other teachers	85.61	24.81	89.48	16.69	87.63	16.29

Note: not important= 1-25, *somehow important*= 26-50, *important* = 51-75, *very important*= 76-100

Boxplots were implemented in order to observe how disperse the ratings were for each item (See Figure 11). Medians differ to some extent among the regional groups as it can be appreciated in the level "learn through experiences that involve teachers' perspectives and values." This difference could be attributed to sampling error, or could reflect real differences between regional groups with respect to this level.

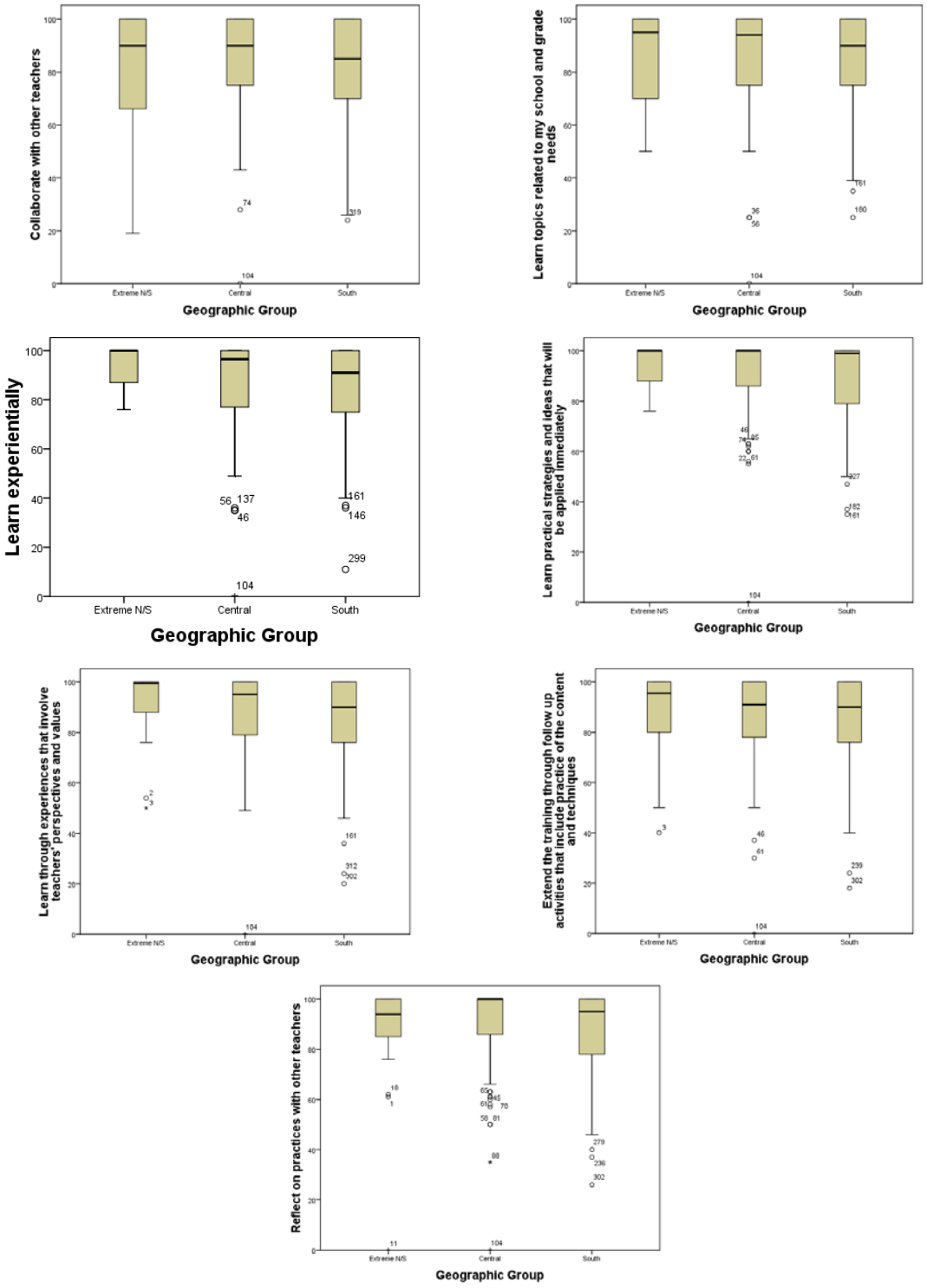


Figure 11 Boxplots representing the distribution of ratings given to the importance of each activity and opportunity across regional groups.

An ANOVA test was implemented in order to test for mean differences across the three regional groups. This test was implemented to compare how much of the preferences for activities and opportunities differ from each other to how much variability is within each group. A hypothesis of no difference among means of preferences for opportunities and activities (dependent variable) across the three regional groups (independent variable) was established. The null and alternative hypothesis for each group was: H_o: $\mu 1=\mu 2=\mu 3$, all means are similar, and H_1: at least one of the means is different from the others.

In order to check the ANOVA assumption of homogeneity of variance a Levene's test was implemented. Under the null hypothesis of no difference between group variances Levene's test resulted in $p< .05$ for the options "learn practical strategies and ideas that will be applied immediately" and "learn through experiences that involve teachers' perspectives and values." A One-Way ANOVA test was performed having regional group as independent variable with three levels and importance of opportunities and activities as dependent variable with seven levels. This test did not reveal significant differences among the groups; consequently, the null hypothesis of no difference is retained.

A final analysis was run in order to determine if the opportunities and activities were related to one another either positively, where as the level of preferences increases for one opportunity or activity it simultaneously increases for another opportunity or activity, or negatively, where as the level of preferences decreases for one opportunity and activity it simultaneously increases for another one. For this purpose a Pearson

correlation (*r*) test was run among the cases, findings revealed a moderate positive relationship between the different opportunities and activities.

"Learn experientially" produced a consistent moderate positive significant correlation with all the opportunities and activities (See Table 42). The emphasis of this activity is the *hands on* learning approach, which correlates positively with activities during and after the professional training, and when they are individual or in-group. The correlation between the cases in the activity "collaborate with other teachers" with the cases in the activity "reflect on practices with other teachers" produced a significant correlation at $\alpha = .05$ (r (333) = .50, $p < .05$) and with "learn topics related to my school and grade needs" produced a significant correlation at $\alpha = .05$ (r (335) = .56, $p < .05$).

The highest correlation was between "extend the training through follow up activities that include the practice of content and techniques" and the opportunity "learn through experiences that involve teachers' perspectives and values" at $\alpha = .05$ (r (337) = .61, $p < .05$). This indicates that in follow up activities teachers may adapt what is being taught to their needs and context. On the other hand, the lowest correlation r=.34, resulted between "learn strategies and ideas that will be applied immediately," and "collaborate with other teachers." This is a low positive correlation indicating that participants who consider *very important* to collaborate with other teachers vary in their opinion about strategies to be applied immediately, considering it *important* to *very important*. The participants who consider *very important* to have strategies to be applied immediately also vary in their opinion about "collaborate with other teachers;" these opinions vary from *not important* to *very important*.

These correlations are positive and moderate therefore it is possible than in some cases the importance given to one activity is similar to the importance given to another activity, however, there are some cases where one activity is rated as *important* and another activity is rated as *not important* (See Figure 12).

Table 42
Correlation between Importance Given to Topics to be Integrated in Teacher Professional Development

Opportunities and Activities	1	2	3	4	5	6	7
1.Collaborate w/ other teachers		.56	.46	.34	.43	.43	.50
2.Learn topics related to my school and grade needs	.56	-	.58	.43	.49	.44	.47
3.Learn experientially	.46	.58	-	.56	.57	.58	.53
4.Learn strategies and ideas that will be applied	.34	.43	.56	-	.57	.52	.37
5.Learn through experiences that involve teachers	.43	.49	.57	.57	-	.61	.53
6.Extend the training	.43	.44	.58	.52	.61	-	.54
7.Reflect on practices with other teachers	.50	.47	.53	.37	.53	.54	-

Note:
1.Collaborate w/ other teachers
2.Learn topics related to my school and grade needs
3.Learn experientially
4.Learn strategies and ideas that will be applied immediately
5.Learn through experiences that involve teachers perspectives and values
6.Extend the training
7.Reflect on practices with other teachers

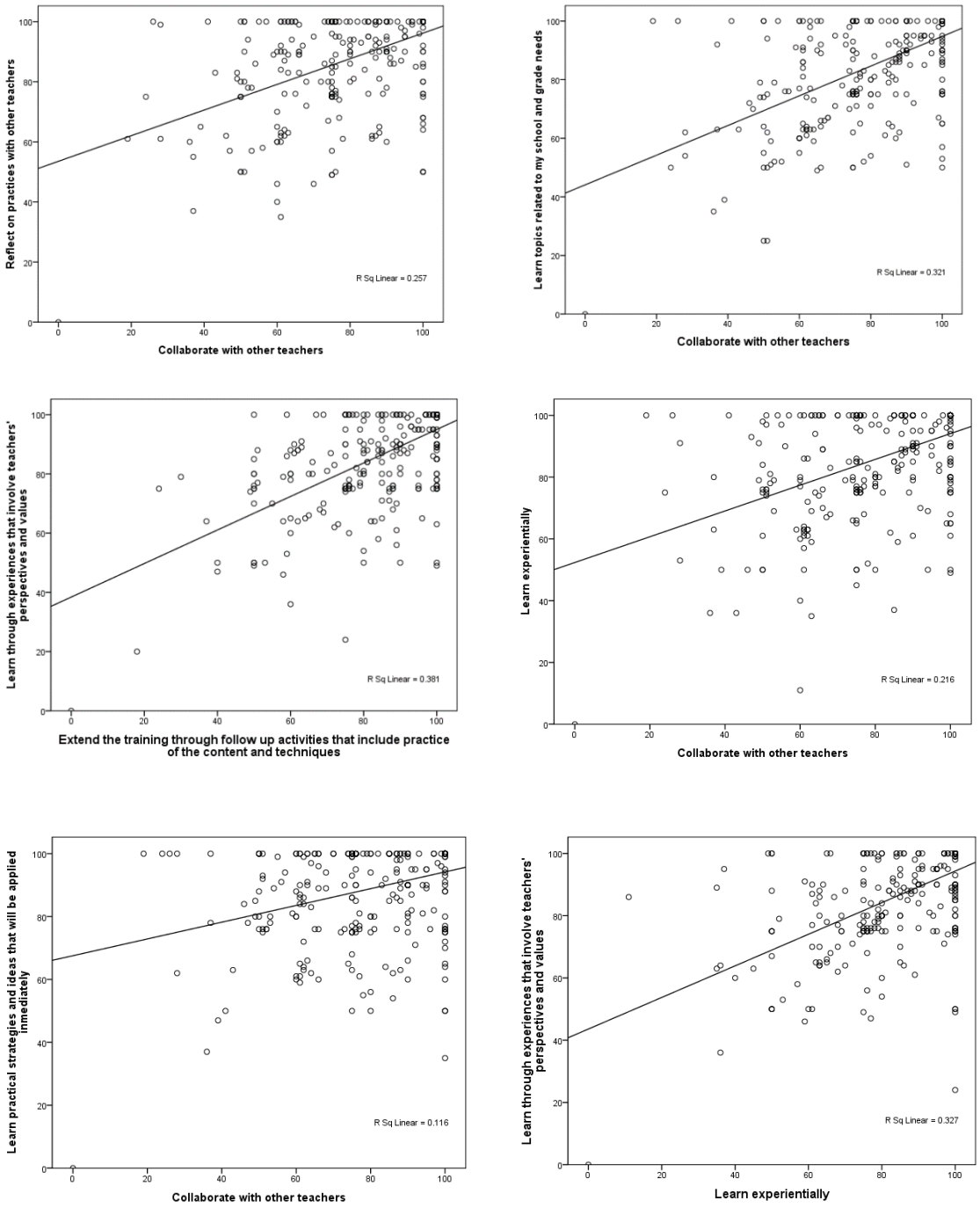


Figure 12 Scatterplots showing the relationship between the importance of topics

Summary. Are the principles of adult learning paradigm for the design of teachers' professional development represented in the preferences and opinions of teachers in Chile?

Opportunities and activities. Participants in the study were asked to rate how important was for them to have programs offering the following opportunities and/or activities: (a) "to collaborate with other teachers," (b) "to learn topics related to my school and grade needs," (c) "to learn experientially," (d) "to learn practical strategies and ideas that will be immediately applicable," (e) "to learn through experiences that involve my perspectives and values," (f) "to extend the training through follow up activities that include practice of the content and techniques," and (g) "to reflect on my practices with other teachers."

A descriptive analysis was implemented to identify tendencies and variability in ratings sample wise. The results indicate that all activities were ranked on average as *very important*. A further analysis of this question considered regional location as a variable that could impact the ratings. The sample was divided into three groups Far North/South, Central, and South group. Similar as in the sample wise analysis all the topics were rated on average as *very important*. Since there was variability in ratings between activities across the three regional groups, a One-Way ANOVA test was performed having regional group as independent variable with three levels and importance of opportunities and activities as dependent variable with seven levels. This test did not reveal significant differences among the groups; consequently, the null hypothesis of no difference is retained.

A final analysis was run in order to determine if the opportunities and activities were related to one another. For this purpose a Pearson correlation (r) test was run among the cases, findings revealed a moderate positive and significant relationship between the different opportunities and activities.

"Learn experientially" produced a consistent moderate positive significant correlation with all the opportunities and activities. The emphasis of this activity is the *hands on* learning approach, which correlates positively with activities during and after the professional training, and with individual, or group activities. The correlation between the cases in the activity "collaborate with other teachers" with the cases in activity "reflect on practices with other teachers" produced a significant correlation at $\alpha = .05$ (r (333) = .50, $p < .05$) and with "learn topics related to my school and grade needs" produced a significant correlation at $\alpha = .05$ (r (335) = .56, $p < .05$).

The highest correlation was between "extend the training through follow up activities" that include the practice of content and techniques" and the opportunity "learn through experiences that involve teachers' perspectives and values" at $\alpha = .05$ (r (337) = .61, $p < .05$). This indicates that in follow up activities teachers may adapt what is being taught to their needs and context. On the other hand, the lowest correlation r=.34, resulted between "learn strategies and ideas that will be applied immediately," and "collaborate with other teachers."

Research Question Three

What are the obstacles and benefits perceived by rural teachers from Chile in the use of online resources to deliver their professional development?

One question in the survey was intended to identify obstacles and two questions were intended to identify benefits which could be pedagogical or logistic.

Activities through online resources. Question 3.1 asks "How helpful would be for your teaching practices to participate in these activities through online resources?" The choices to this question were (a) "exchange teaching materials online with teachers from other schools," (b) "exchange feedback online about classroom management with teacher from other schools," (c) "work in educational activities online with teachers from other schools," and (d) "communicate with other teachers online about general teaching practices and experiences." Although all these activities seem similar since all of them imply online contact, they have different purposes that vary between administrative, educational, and personal. Participants were asked to rate these choices using a Likert scale and numeric values, the options for rating were: *not helpful* (1 to 25), *somehow helpful* (26 to 50), *helpful* (51 to 75), and *very helpful* (76-100). A descriptive analysis was implemented to identify tendencies and variation in the ratings sample wise. The results of this analysis indicate that on average participants rate having these activities online as *very helpful* (76 to100) for teaching practices, especially in the case of "exchange teaching materials" which obtained the largest mean (See Table 43)

Table 43
Descriptive Statistics of Helpfulness of Activities Implemented Online Sample Wise

Activities	Mean	S.D.
Exchange teaching materials	83.68	19.81
Exchange feedback about classroom management	78.66	22.67
Work in educational activities online w/ other teachers	79.00	21.92
Communicate about general teaching practices and experiences	78.98	23.01

Note: not helpful= 1-25, somehow helpful= 26-50, helpful = 51-75, very helpful= 76-100

A second approach to this analysis considered the regional location of schools; therefore, the sample was split into three regional locations groups Far North/South, Central, and South. The three regional groups rated on average all the activities implemented online as *very helpful* for their teaching practices (76 to100) (See Table 44).

Table 44
Descriptive Statistics of Helpfulness of Activities Implemented Online by Regional Group

Online activities	Regional Groups					
	N/S (n = 18)		Center (n = 119)		South (n = 196)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Exchange materials	83.28	21.67	86.22	16.78	82.20	21.22
Exchange feedback	76.72	26.07	79.37	21.83	78.41	22.95
Work in educational activities	76.72	24.29	81.32	19.75	77.81	22.91
Communicate with other teachers about general practices	78.56	25.25	81.15	21.69	77.72	23.58

Note: not helpful= 1-25, *somehow helpful*= 26-50, *helpfu*l = 51-75, *very helpful*= 76-100

Although all the means are in the range of *very helpful* criteria, it is possible to observe some differences between online activities mean scores as well as between regional location groups. Boxplots were implemented to observe how disperse ratings for each online activity across regional groups were (See Figure 13). The medians for

preferences differ slightly among the regional location groups. Although the difference seems to be minimal it is necessary to evaluate if these are the result of sampling error or reflect real differences due to regional location membership.

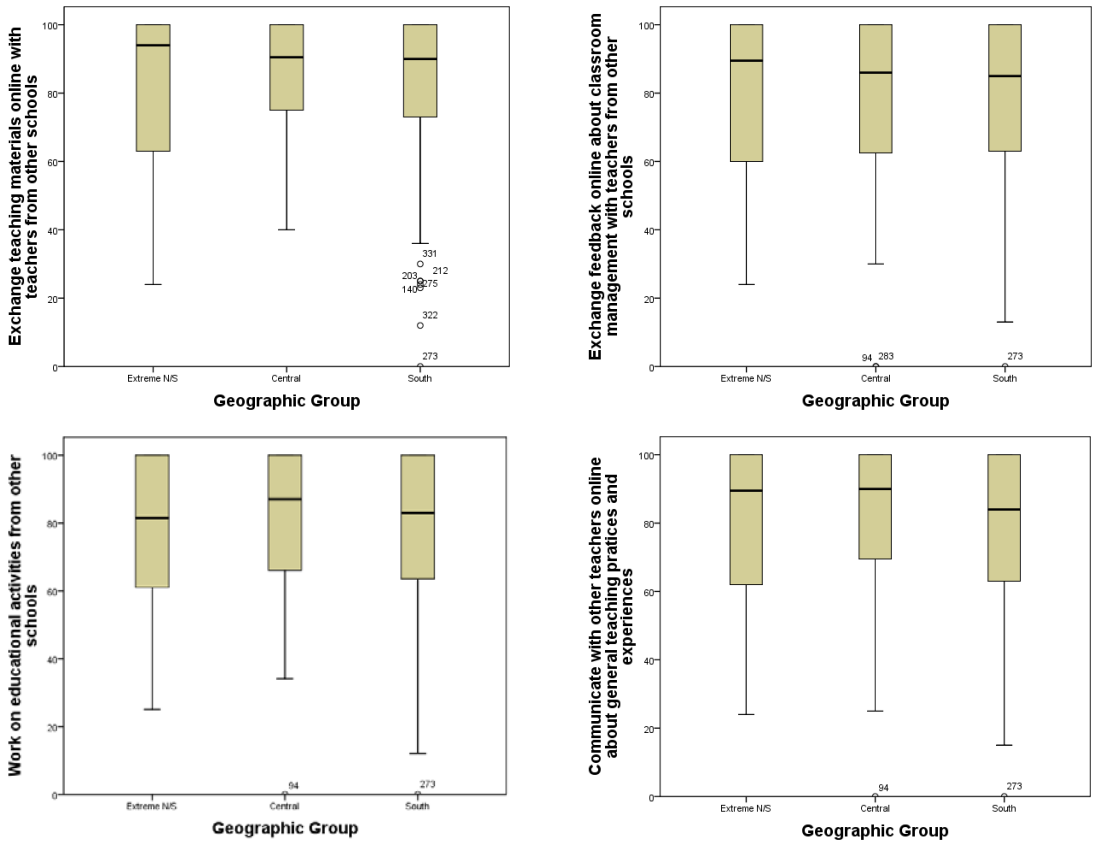


Figure 13 Ratings given to the helpfulness of having these activities online to benefit teaching practices across regional groups.

As it has been done in previous questions, an ANOVA test was implemented in order to test for mean differences of the dependent variable online activities across the three regional groups. This test was implemented to compare how much of the preferences for online activities differ from each other to how much variability is within

each group. A hypothesis of no difference among means of preferences for online activities across the three regional groups was established. The null and alternative hypothesis for each group was: H_o: $\mu 1=\mu 2=\mu 3$, all means are similar, and H_1: at least one of the means is different from the others.

In order to check the ANOVA assumption of homogeneity of variance a Levene's test was implemented. Under the null hypothesis of no difference between group variances Levene's test resulted in $p > .05$, therefore the assumption of homogeneity is retained. A One-Way ANOVA test was performed having regional group as independent variable with three levels and online activities as dependent variable with four levels. This test did not reveal significant differences among the groups, consequently the null hypothesis of no difference is retained, and therefore the differences observed in means between regional groups are due to sampling error and are not related to regional group membership.

A final analysis was run in order to determine if the online activities presented were related to one another either positively, where as level of preferences increases for one online activity increases in another method, or negatively, where as the level of preferences decreases for one online activity it simultaneously increases for another one. For this purpose, a Pearson correlation (r) test was run among the cases in online activities, findings revealed from moderate to strong positive relationship between the different online activities (See Figure 14). The strongest positive correlation happens between the option "work on educational activities with teachers from other schools" and the option "communicate with other teachers online about general teaching practices

and experiences" resulted in a significant correlation at α = .05 (r (337) = .83, p< .05). The correlation between "work on educational activities from other schools," and "exchange feedback online about classroom management with teachers from other schools" resulted in α = .05 (r (335) = .79, p< .05). The correlation between "exchange feedback online about classroom management with teachers from other schools" and "exchange teaching materials online with teachers from other schools" resulted in α = .05 (r (335) = .71, p< .05).

These strong positive correlations indicate a tendency to present similar criteria about the helpfulness of activities online

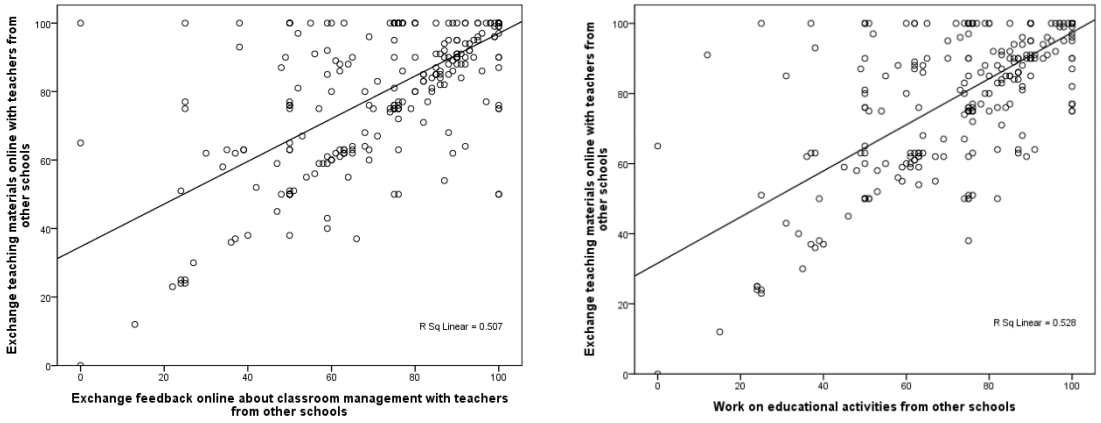


Figure 14 Correlation helpfulness of online activities for teaching practices.

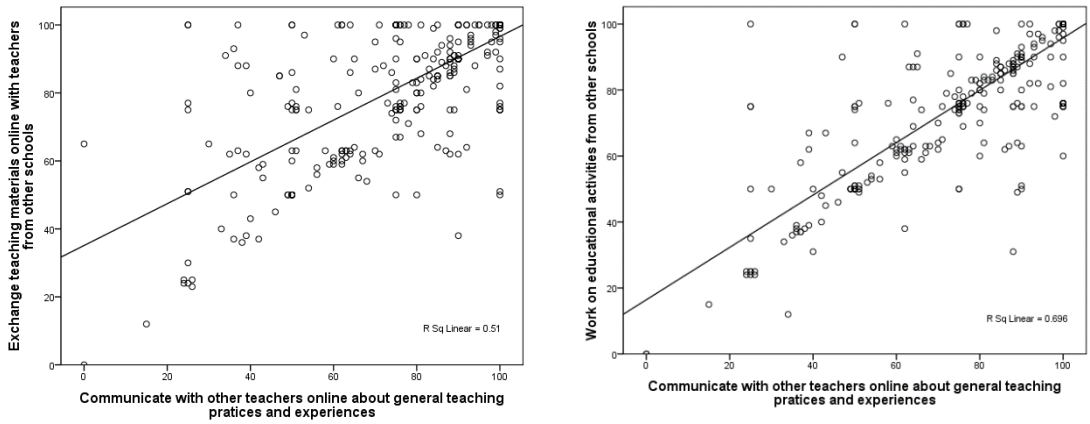


Figure 14 Continued

Benefits of using online resources. A second question asked about benefits of using online resources to deliver teacher professional development. Question 3.2 asks, "To what extend do you agree these would be benefits of implementing teachers' professional development programs using online-resources." There were four choices (a) "saves time," (b) "cost effective," (c) "easy to incorporate into my daily schedule," (d) "connecting with other teachers," and (e) "more variety of learning activities." Participants indicated their agreement or disagreement with the benefits of these options by selecting one of these criteria s*trongly disagree* (1 to 25), *disagree* (26 to 50), *agree* (51 to 75), or *strongly agree* (76 to 100). The technical format for this question was a slider that allowed recording the criteria selected and the numeric continuous value. A descriptive analysis was implemented sample wise to identify tendencies and variability in ratings. The results indicate that participants on average *agree* (51 to76) with these items as benefits of implementing teachers' professional development using

online resources. There is a tendency to *strongly agree* that the benefits "connecting with other teachers" and "more variety of activities" would be benefits of implementing teachers' professional development programs using online resources (See Table 45).

Table 45
Descriptive Statistics about Benefits of Implementing Teacher Professional Development using Online Resources Sample Wise

Benefits	Mean	S.D.
Saves time	75.65	22.44
Cost effective	66.00	26.13
Easy to incorporate into my daily schedule	68.01	27.10
Connecting with other teachers	77.24	22.32
More variety of learning activities	80.53	21.03

Note: strongly disagree= 1-25, *disagree*= 26-50, *agree* = 51-75, *strongly agree*= 76-100.

As in previous questions, a second analysis of this question was performed based on the assumption that regional location could affect the preferences of the participants; the sample was split in three regional locations: Far North/South, Central, and South groups. Participants from the three groups rated similarly all the benefits, with the exception of the benefit "more variety of learning activities" which varies from *agree* in the Far North/South group to *strongly agree* in the Center and South group (See Table 46).

Table 46
Descriptive Statistics of Benefits of Implementing Teacher Professional Development Using Online Resources by Regional Groups

Benefits	Regional Groups					
	Far N/S (n = 18)		Center (n = 119)		South (n = 196)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Saves time	76.33	23.56	75.92	22.14	75.43	22.64
Cost effective	69.17	26.15	64.54	25.88	66.73	26.38
Easy to incorporate in schedule	65.50	28.80	67.77	26.17	68.39	27.63
Connecting with other teachers	74.11	22.94	77.76	20.16	77.21	23.58
More variety of learning activities	71.28	28.88	80.42	17.83	81.44	21.87

Note: strongly disagree= 1-25, *disagree*= 26-50, *agree* = 51-75, *strongly agree*= 76-100.

A set of boxplots were implemented to represent the variability in the rating of these benefits across the three regional groups. These differences in rating can be seen in the "cost effective" benefit were medians are slightly different (See Figure 15).

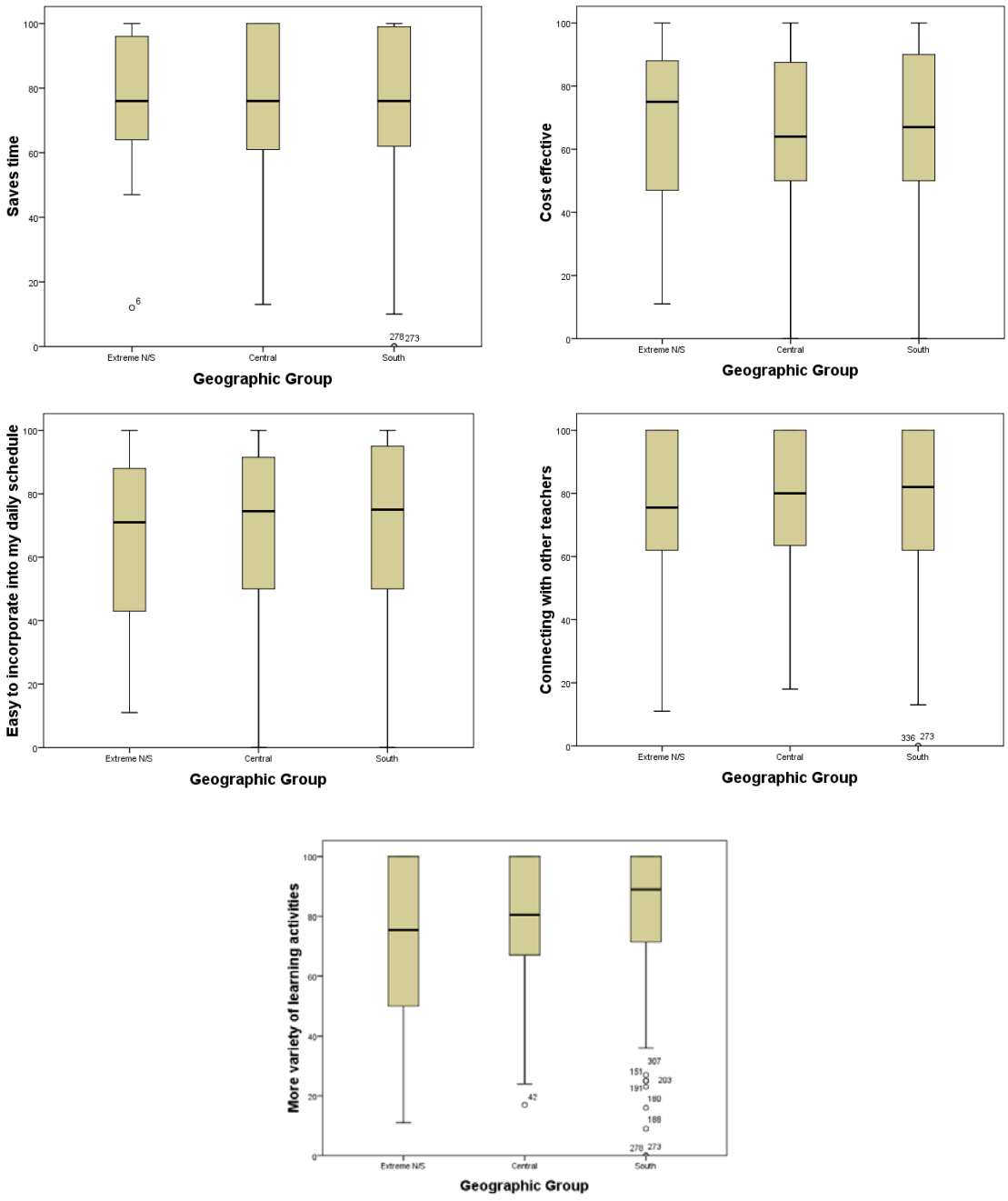


Figure 15 Boxplots portraying the distribution of ratings given to benefits of implementing teacher professional development online.

In order to determine if these mean differences are due to sampling error or reveal a genuine difference due to regional location membership an ANOVA test was implemented. A hypothesis of no difference among means of preferences for benefits across the three regional groups was established. The null and alternative hypothesis for each group was: H_o: $\mu 1=\mu 2=\mu 3$, all means are similar, and H_1: at least one of the means is different from the others.

In order to check the ANOVA assumption of homogeneity of variance a Levene's test was implemented. Under the null hypothesis of no difference between group variances Levene's test resulted in $p< .05$ for the option "more variety of learning activities," thus the assumption of homogeneity of variance has been violated. A One-Way ANOVA test was performed having regional group as independent variable with three levels and benefits as dependent variable with five levels. This test did not reveal significant differences among the groups, consequently the null hypothesis of no difference is retained, and the differences observed are assumed to be due to sampling error.

A final analysis was run in order to determine if the benefits were related to one another either positively, where as level of preferences increases for one benefit it also increases for another benefit, or negatively, where as the level of preferences decreases for one benefit it simultaneously increases for other benefit. For this purpose a Pearson correlation (r) test was run among the cases in benefits, findings revealed a moderate positive relationship between the different benefits (See Figure 16). The benefit "saves time" resulted in a significant correlation at $\alpha = .05$ (r (323) = .69, $p< .05$) with "cost

effective." This indicates that cases whom *strongly agree* with "saves time" as a benefit, also *strongly agree* with "cost effective" as a benefit. There are also cases that *agree* and *strongly agree* with the "save time" benefit but *strongly disagree* and *disagree* with "cost effective" benefit. There is a low correlation between the benefit "more variety of learning activities" and "cost effective" $\alpha = .05$ (r (321) = .42, $p < .05$, still this is a significant correlation. There are cases that *strongly disagree* and *disagree* with "cost effective" as a benefit but *agree* and s*trongly agree* with the benefit of "more variety of learning activities." The correlation between "more variety of activities and connecting with other teachers" resulted in $\alpha = .05$ (r (326) = .68, $p < .05$ a positive moderate and significant correlation. "Cost effective" and "connect with other teachers" resulted in a significant correlation at $\alpha = .05$ (r (322) = .51, $p < .05$ consequently there are cases who *strongly agree* that these two are benefits, however there are cases *strongly agree* with "more variety of learning activities" and *strongly disagree* with "cost effective."

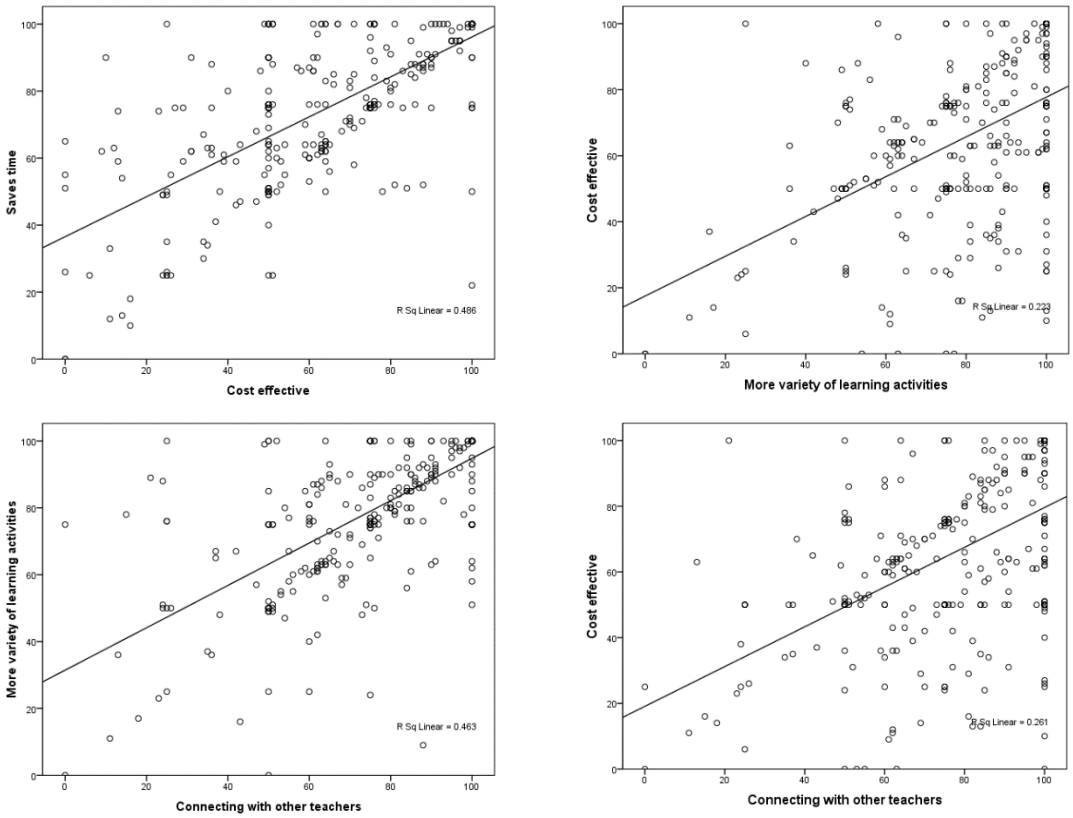


Figure 16 Correlation among benefits to implement teacher professional development online.

Obstacles. The section about obstacles was addressed through question 3.3 "To what extent these elements would be obstacles to implementing teachers' professional development using online resources in your school?" There were four choices to answer this question: (a) "lack of utilities: electrical power, generator broken," (b) "lack of computers," (c) "lack Internet," (d) "absence of technology experience." Participants were asked to rate these choices using a Likert scale and numeric values, the options for rating were: *no obstacle* (1 to 25), *somehow obstacle* (26 to 50), *obstacle* (51 to 75), *big obstacle* (76 to 100).

As in previous questions, a descriptive analysis was implemented sample wise to identify the tendencies and variability of ratings. The results of this analysis indicate that participants consider "lack of Internet service" as *big obstacle* on average, while "lack of computers" is rated as *obstacle* on average. "Lack of utilities: electrical power, generator broken" and "absence of technology experience" were rated as *somehow obstacle* (See Table 47).

Table 47
Descriptive Statistics for Obstacles to the Implementation of Online Professional Development Sample Wise

Obstacles	Mean	S.D.
Lack of utilities: electrical power, generator broken	48.64	37.35
Lack of computers	54.63	35.32
Lack of Internet service	76.10	31.75
Absence of technology experience	48.14	34.02

Note: no obstacle= 1-25, *somehow obstacle*= 26-50, *obstacle* = 51-75, *big obstacle= 76-100*

A subsequent analysis was performed based on the assumption that regional location could impact the preferences of the participants; therefore the sample was split in three groups having three levels, Far North/South, Central, and South regional groups. "Lack of Internet" was rated as *big obstacle* by the Far North/ South and South groups, while the Center group rated it as *obstacle*. The North South/ group also considered "lack of utilities: electrical power, generator broken" as *obstacle* while the Center and South group rated it as *somehow obstacle*. "Lack of PC" was rated as *somehow obstacle* by the Center group and as *obstacle* by the South and Far North/South groups. "Absence of technology experience" was rated as *somehow obstacle* in the South and Center groups and as obstacle in the Far North/South group. As a general tendency, the Far

North/South group ratings range from *obstacle* to *big obstacle*, while the other two groups present ratings from *somehow obstacle*, *obstacle*, and *big obstacle* (See Table 48).

Standard deviations were large across all groups indicating the existence of disperse ratings for obstacles to the use of online systems to deliver teacher professional development.

Table 48
Descriptive Statistics for Obstacles to the Implementation of Online Professional Development by Regional Group

Obstacles	Regional Groups					
	N/S (n = 17)		Center (n = 116)		South (n = 195)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
lack of utilities: electrical power, generator broken	67.29	33.57	44.02	38.00	49.73	36.82
Lack PC	58.06	35.01	50.54	35.73	56.80	35.06
Lack of Internet	91.18	13.18	68.89	34.44	78.48	30.57
Absence technology experience	58.41	36.05	50.43	33.90	45.77	33.81

Note: no obstacle= 1-25, *somehow obstacle*= 26-50, *obstacle* = 51-75, *big obstacle*= 76-100

Boxplots were implemented to observe how disperse ratings for each obstacle across regional groups were (See Figure 17). The medians for preferences differ greatly among the regional groups as it can be seen in "lack of utilities" boxplot. Although it is expected to have differences due to sampling error, the researcher decided to implement a ANOVA test to check if the mean differences observed were due to differences between the sample and the population or it reflects genuine differences due to geographic location.

Before the ANOVA test, the homogeneity of variance assumption was tested through the implementation of a Levene's homogeneity of variance test. Under the null hypothesis of no difference between group variances Levene's test resulted in $p < .05$ for the option "lack of Internet", thus the assumption of homogeneity of variance has been violated. A One-Way ANOVA test was performed having regional group as independent variable with three levels and obstacles as dependent variable with four levels. This test revealed significant differences in the means of the group representing "lack of utilities: electrical power, generator broken" ($F(2, 300)= 3.07$, $p < .05$). It also revealed a significant difference in the means of the group "lack of Internet" ($F (2, 325) = 4.79$, $p < .05$. Consequently, the null hypothesis that the means in the population are equal is rejected. In order to determine which groups are different from which other group a Tukey HSD test of multiple comparisons was implemented. For the "lack of utilities: electrical power, generator broken" group the test revealed significant differences between the Central and Far North/ South group. For the "lack of Internet service" the test revealed significant differences between Central and Far North/South group. It is important to indicate that the Central group comprises the urban regions in contrast to the Far North/South group, which includes more isolated and rural areas presenting difficult access to connectivity as well as transportation.

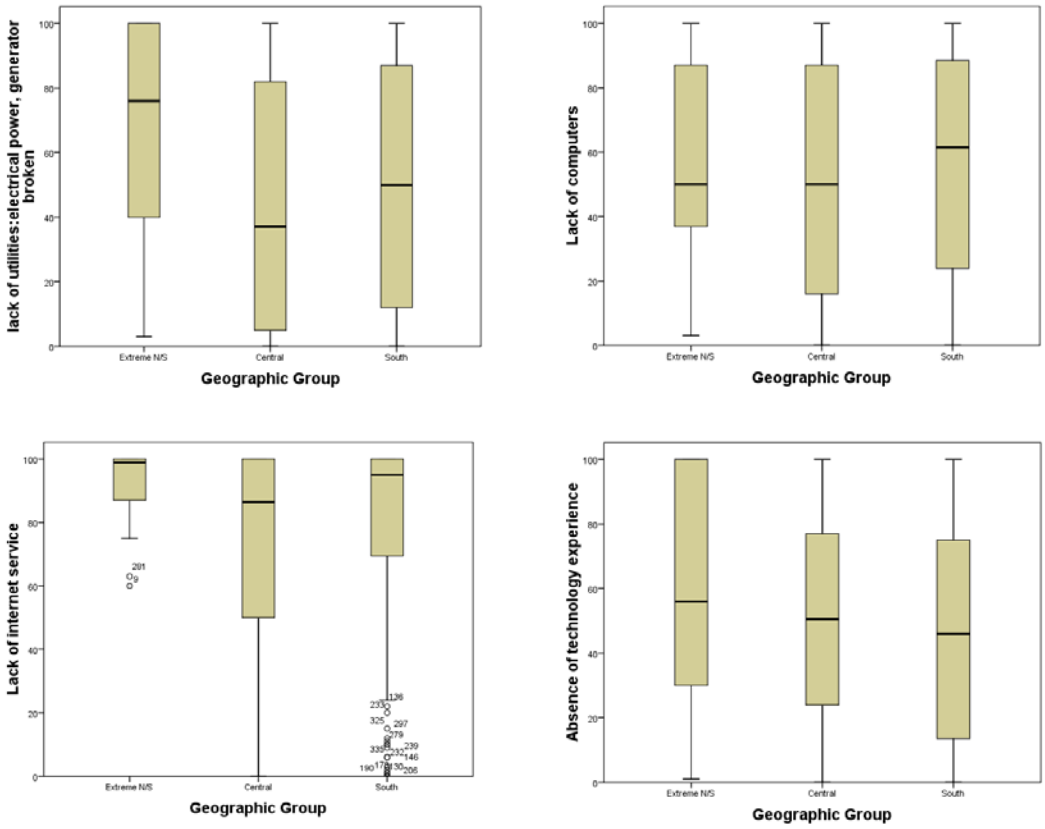


Figure 17 Boxplots showing the variations in ratings given to the obstacle variable across the three regional groups

In order to determine relationships between the obstacles if the levels of preferences for one either obstacle indicates a similar preferences for another obstacle, or negatively, where preferences for one obstacle are the opposite preferences for another one. For this purpose a Pearson correlation (*r*) test was run among the cases in benefits, findings revealed a moderate positive relationship between the different obstacles (See Figures 18). The obstacle "lack of utilities: electrical power, generator broken" resulted in a correlation of $\alpha = .05$ (r (295) = .64, $p < .05$) with "lack of computers." This indicates that some cases consider both as *big obstacles*, as there are cases, which rated

"lack of computers" is a *big obstacle* and "lack of utilities: electrical power, generator broken" as *not obstacle*. "Lack of Internet" and "absence of technology experience" resulted in α = .05 (*r* (317) = .26, *p*< .05) this is a low positive and significant correlation, which indicates that cases which rated "lack of Internet" as a *big obstacle* also rated "absence of technology experiences" as *not obstacle*, *somehow obstacle*, *obstacle* or *big obstacle*. "Lack of computers" was correlated to "absence of technology experience" resulting in α = .05 (*r* (296) = .39, *p*< .05). This is a low positive correlation where cases which rated "lack of computers" as a *not an obstacle* also rated "absence of technology experience" as *big obstacle*, *somehow obstacle* and *obstacle*. There ratings for one of the variables did not necessarily imply the same rating for the other variable

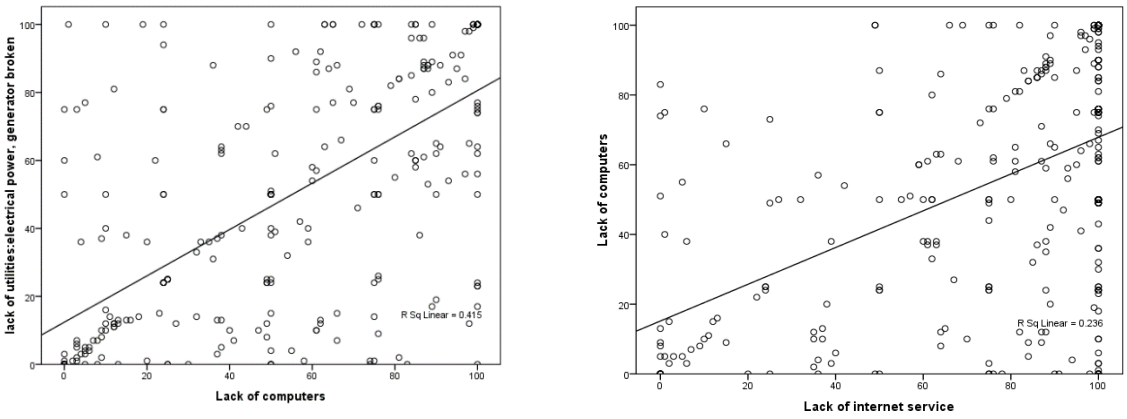


Figure 18 Correlation between the obstacles to the implementation to teacher professional development online.

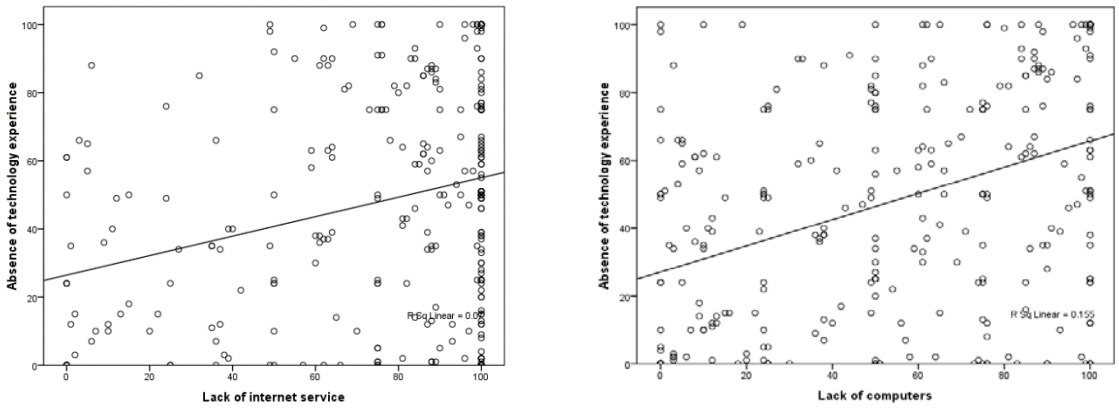


Figure 18 Continued

Summary. What are the barriers and benefits perceived by rural teachers from Chile in the use of online resources to deliver their professional development? This research questions was addressed through three questions in the survey, two of them refer to benefits for pedagogical purposes and logistic benefits. A third one is related to obstacles.

Activities through online resources. This question refers to benefits of having activities implemented online, the activities presented were (a) "exchange teaching materials online with teachers from other schools," (b) "exchange feedback online about classroom management with teacher from other schools," (c) "work in educational activities online with teachers from other schools," and (d) "communicate with other teachers online about general teaching practices and experiences."

A first descriptive analysis to identify tendencies and variability in ratings was implemented sample wise. The findings indicate that all the activities implemented

online were considered on average *very helpful* for teaching practices, this especially in the case of "exchange teaching materials" that obtained the largest average score.

Since regional location was considered a factor that could affect the rating of the participants, the sample was split in three groups: Far North/South, Central, and South group. A second descriptive analysis was run through these three groups, the result shows that the activities implemented online were rated on average as *very helpful*. A One-Way ANOVA test was implemented in order to test for mean differences of the dependent variable online activities across the three regional groups. This test did not reveal significant differences among the groups, consequently the null hypothesis of no difference is retained, and therefore there is not enough evidence to conclude that differences observed in means between regional groups could be attributed to regional location.

A final analysis was run in order to determine if the online activities presented were related to one another. For this purpose, a Pearson correlation (r) test was run among the cases in online activities, findings revealed from moderate to strong positive relationship between the different online activities. The strongest positive correlation happened between the option "work on educational activities with teachers from other schools" and the option "communicate with other teachers online about general teaching practices and experiences" resulted in a significant correlation at $\alpha = .05$ (r (337) = .83, $p < .05$). The correlation between "work on educational activities from other schools," and "exchange feedback online about classroom management with teachers from other schools" resulted in $\alpha = .05$ (r (335) = .79, $p < .05$). The third strongest correlation

happens between "exchange feedback online about classroom management with teachers from other schools" and "exchange teaching materials online with teachers from other schools", $\alpha = .05$ (r (335) = .71, $p < .05$).

Logistic benefits of online resources. The second component of the research questions was about benefits of using online resources to deliver teacher professional development. Participants were asked to *agree* or *disagree* with these benefits: (a) saves time, (b) "cost effective," (c) 'easy to incorporate into my daily schedule," (d) "connecting with other teachers," and (e) "more variety of learning activities." A descriptive analysis was implemented to identify tendencies and variability in ratings sample wise. The results obtained indicated that participants on average *agree* with "saves time," "cost effective" and "easy to incorporate in daily schedule" as benefits of implementing teachers' professional development online, and on average *strongly agree* with "connecting with other teachers" and "more variety of activities" as benefits of implementing teachers' professional development online.

As in previous questions, a descriptive analysis was implemented to identify tendencies and variability in ratings from three regional groups identified: Far North/South, Central, and South. Each group rated similarly the benefits listed, this with the exception of the benefit "more variety of learning activities" which varies from *agree* in the Far North/South group to *strongly agree* in the Center and South group. In order to determine if these mean differences are due to sampling error or reveal a genuine difference due to regional location membership an ANOVA test was implemented. This test did not reveal significant differences among the groups, consequently the null

hypothesis of no difference is retained, and the differences observed are assumed to be due to sampling error.

A final analysis was run in order to determine if the benefits were related to one another. For this purpose a Pearson correlation (r) test was run among the cases, findings revealed a moderate positive and significant relationship between the different benefits. The benefit "saves time" resulted in a significant correlation at $\alpha = .05$ (r (323) = .69, $p < .05$) with "cost effective." There is a low correlation between the benefit "more variety of learning activities" and "cost effective" $\alpha = .05$ (r (321) = .42, $p < .05$, still this is a significant correlation. The correlation between "more variety of activities and connecting with other teachers" resulted in $\alpha = .05$ (r (326) = .68, $p < .05$ a positive moderate and significant correlation. "Cost effective" and "connect with other teachers" resulted in a significant correlation at $\alpha = .05$ (r (322) = .51, $p < .05$.

Obstacles. The third part of this research question was related to obstacles to implement teachers' professional development using online resources. There were four choices to answer this question: (a) "lack of utilities: electrical power, generator broken," (b) "lack of computers," (c) "lack of Internet," (d) "absence of technology experience." A descriptive analysis was implemented sample wise to identify tendencies and variability in ratings obtained. On average, the results identified "lack of Internet" as *big obstacle,* "lack of computers" as *obstacle* and "lack of utilities: electrical power, generator broken" and "absence of technology experience" as *somehow obstacle*.

A subsequent analysis was performed was performed based on the assumption that regional location could impact the preferences of the participants; therefore the

sample was split in three groups having three levels, Far North/South, Central, and South regional groups. The groups Far North/ South and South rated on average as *big obstacle* the "lack of Internet," while the Center group rated it as *obstacle*. The North South/ group also considered on average "lack of utilities: electrical power, generator broken" as *obstacle*, while the Center and South group rated it as *obstacle* on average. The Far North/South group rated "Lack of PC" as *somehow obstacle* by the Center group and as *obstacle.* "Absence of technology experience" was also rated as *somehow obstacle* by the South and Center group and *obstacle* for the Far North/South group. The Far North/South group ratings range from *obstacle* to *big obstacle*, while the other two groups resulted in ratings that range from *somehow obstacle* to *big obstacle*.

Rating variability was observed in the items across the three regional groups, although it is expected to have differences due to sampling error, the researcher decided to implement a ANOVA test to check if the mean differences observed were due to differences between the sample and the population or it reflects genuine differences between the regional groups. A One-Way ANOVA test was performed having regional group as independent variable with three levels and obstacles as dependent variable with four levels. This test revealed significant differences in the means of the group representing "lack of utilities: electrical power, generator broken" ($F(2, 300)= 3.07$, $p < .05$). It also revealed a significant difference in the means of the group "Lack of Internet" ($F (2, 325) = 4.79$, $p < .05$. Consequently, the null hypothesis that the means in the population are equal is rejected. In order to determine which groups are different from which other group a Tukey HSD test of multiple comparisons was implemented. For the

"lack of utilities: electrical power, generator broken" group the test revealed significant differences between the Central and Far North/ South group. For the "lack of Internet service" the test revealed significant differences between Central and Far North/South group. It is important to indicate that the Central group comprises the urban and economically developed regions in contrast to the Far North/South group, which includes more isolated and rural areas presenting difficult access to connectivity as well as transportation.

In order to determine relationships between the obstacles a Pearson correlation (r) test was run among the cases, findings revealed a moderate positive significant relationship between the different obstacles. The obstacle "lack of utilities: electrical power, generator broken" resulted in a correlation of $\alpha = .05$ (r (295) = .64, $p < .05$) with "lack of computers." "Lack of Internet" and "absence of technology experience" resulted in $\alpha = .05$ (r (317) = .26, $p < .05$) this is a low positive and significant correlation. "Lack of computers" was correlated to "absence of technology experience" resulting in $\alpha = .05$ (r (296) = .39, $p < .05$).

Research Question Four

What is the relationship between rural schools settings and rural teachers' preferences for professional development?

The items selected as rural schools settings were those that represent the characteristics that differentiate rural schools from urban schools settings. The items were (a) "number of teachers," (b) "number of students enrolled," (c) "role at school," and (d) "number of grades taught simultaneously." The researcher was interested in

investigating the relationship between the responses to these rural setting and the preferences for teachers' professional development, more specifically, delivery methods, topics, and activities and opportunities to be included in professional development. A multiple correlation analysis test was implemented using Spearman correlation coefficient (r_s) for ranked data since the variables where in ordinal scale. Rural settings were identified as independent variables and the preferences for teacher professional development were the dependent variables.

Rural schools settings and topics. The first multiple correlation was run between the rural settings and the levels of appropriateness of topics to be included in teachers' professional development (See Table 49).

Table 49
Correlation Matrix between Rural Settings and Topics to be Included in Teacher Professional Development (n=338)

Topics	Rural Settings			
	Role [a] at school	Students enrolled	Grades [b] taught simultaneousl	Number of teachers
Students performance assessment	-.09	.03	-.04	.05
Classroom management	-.06	.08	-.10	.09
Needs of students from diverse cultural background	-.05	-.07	.02	-.05
Needs of students with disabilities	-.09	.02	-.04	.07
Parent and community involvement	.01	-.04	-.02	-.01
Dealing with students and family issues	-.00	.05	-.09	.08
Teaching English as a foreign language	-.01	-.01	-.01	.02
Teaching indigenous language	.02	-.05	.05	-.04
Strategies to work with teachers from other schools using Internet	.00	-.18*	.14*	-.11*

*Significant at α .05
[a] Teachers may work just teaching or also may work as principal (or other administrative role)
[b] This is known as multigrade classroom and it implies teaching more than one grade simultaneously in the same classroom.

There were three significant results identified; "number of students enrolled" and "strategies to work with teachers from other schools using Internet" produced a small negative correlation of $r = -.18$ which was significant at $\alpha = .05$ (r (331) = .-18, $p < .05$). From this result, it is concluded that the less number of students the more appropriate this topics is considered to be, conversely, the more number of students enrolled the less appropriate this method of delivery. It may be the case that the more students the busier teachers are and therefore the little interest in a topic that requires time to participate.

The second significant correlation between "number of grades taught simultaneously" and "strategies to work with teachers from other schools using Internet" produced a small positive correlation .14, which was significant at $\alpha = .05$ ($r(322) = .14$, $p < .05$). Therefore, the more grades teachers teach simultaneously the more appropriate the topic "strategies to work with teachers from other schools using Internet." A possible interpretation is that since teachers are not trained to teach multigrade classrooms they may consider communicating through Internet with other teachers who have a similar experience as a possibility to learn strategies to work in this scenario.

A third significant correlation resulted between "number of teachers" and "strategies to work with teachers from other schools using Internet." This was a small negative correlation significant at $\alpha = .05$ ($r(316) = .-11$, $p < .05$). A possible interpretation is that the smaller the number of teachers the more interest in learning about interacting through Internet with other teacher and vice versa, the more teachers in the school the less interest in interacting with teachers from other schools through

Internet. The rest of the correlation results tended to be small and negative, which implies that while one variable increases in ratings the other one decreases.

Rural school settings and activities and opportunities. Next correlation test was run between the rural settings and the variable activities and opportunities to be included in teachers' professional development (See Table 50).

Table 50
Correlation Matrix between Rural Settings and Activities and Opportunities to be Included in Teachers' Professional Development (n=337)

Activities and Opportunities	Rural Settings			
	Number of roles at school[a]	Students enrolled	Grades[b] taught simultaneoulsy	Number of teachers
Collaborate w/ other teachers	-.10	.05	-.08	.04
Learn topics related to my school and grade needs	-.03	.02	-.01	.04
Learn experientially	-.05	.02	-.03	.06
Learn strategies and ideas that will be applied immediately	-.05	-.03	.03	-.03
Learn through experiences that involve teachers perspectives and values	-.04	-.00	-.03	.01
To extend the training through follow up activities that include practice of the content and techniques	-.11*	.03	-.05	.04
Reflect on practices with other teachers	-0.3	.03	-.07	.06

*Significant at α .05
[a] Teachers may work just teaching or also may work as principal (or other administrative role)
[b] This is known as multigrade classroom and it implies teaching more than one grade simultaneously in the same classroom.

The correlation test between "role at school" and "extend the training through follow up activities that include practice of the content and techniques" produced a small negative significant correlation of r = -.11 which was significant at α = .05 (r (336) = .-11, p< .05). The interpretation of this result is unclear; it may be the case that the more roles a teacher has at school the less time to participate in extended training and follow

up activities. In general, correlation results were small and negative especially for the "role at school' variable, which indicates the more roles a teacher has the less interest in the topics.

Rural school settings and delivery methods. The third multiple correlation analysis was implemented between the rural settings and methods to deliver teacher professional development. There were five significant results identified (See Table 51).

Table 51
Correlation Matrix between Rural Settings and Methods to Deliver Teachers' Professional Development (n=332)

Methods of Delivery	Rural Settings			
	Number of roles at school[a]	Students enrolled	Grades taught simultaneously[b]	Number of teachers
Live professional university courses	-.03	.11*	-13	.01
Professional conferences	.00	-.06	.01	-.05
Online professional courses	-.03	-.06	.07	-.02
Educational websites	.00	-.15*	.11*	-.08
Mentorship from an experienced teacher	-.04	.03	-.39	.03
Training seminars	-.10	-.01	-.04	.00
Regularly scheduled online collaboration meetings with teachers from other schools	-.02	-.13*	.12*	-.05

*Significant at α .05
[a] Teachers may work just teaching or also may work as principal (or other administrative role)
[b] This is known as multigrade classroom and it implies teaching more than one grade simultaneously in the same classroom.

The correlation between independent variable "number of students enrolled" and the delivery method "live professional university courses" produced a small positive correlation of $r = .11$ which was significant at $\alpha = .05$ ($r\ (329) = .11$, $p < .05$). This indicates that as the number of students increases the rating of appropriateness of "live professional university courses" as delivery method increases too, and as the number of

students decreases the rating of appropriateness of "live professional university courses" decreases too. The correlation between "educational websites" and 'number of students enrolled", was significant at $\alpha = .05$ (r (323) = .-15, $p < .05$). This was a small negative correlation, which indicates that as number of students enrolled increase the ratings of appropriateness of "educational websites" as a delivery method decrease and as the number of students enrolled decrease the ratings for this method increase. A possible interpretation for this relation could be associated to time, having fewer students may allow teachers to have more time to navigate and search for educational websites or/and having more computer available. Another significant correlation was found between "number of students enrolled" and "regularly scheduled online collaboration meetings with teachers from other schools." This was a small negative correlation $\alpha = .05$ (r (323) = .-13, $p < .05$), it could be the case that as the number of students increase teachers have less time and computers available as to schedule regular online meetings with other teachers. The correlation between "grades taught simultaneously" and "educational websites" is significant at $\alpha = .05$ (r (323) = .11, $p < .05$). This indicates that there is a tendency to consider "educational websites" as an *appropriate* delivery method for teacher professional development as the number of grades taught simultaneously increase. This could happen for the need of teachers to find resources and strategies to work in multigrade classrooms. Another significant correlation resulted between "grades taught simultaneously" and "regularly scheduled online collaboration meetings with teachers from other schools', significant at $\alpha = .05$ (r (314) = .12, $p < .05$). This is a positive low correlation, which may happen for the need of teachers who teach more

than one grade simultaneously to connect with teachers who have similar experiences and may share some strategies to work in a multigrade classroom.

Summary. What is the relationship between rural schools settings and rural teachers' preferences for professional development? The rural school settings (a) "number of teachers," (b) "number of students," (c) "role at school," and (d) "grades taught simultaneously" were correlated the references for topics, delivery methods, and activities and opportunities to be included in professional development. A multiple correlation analysis test was implemented using Spearman correlation coefficient (r_s) for ranked data since the variables where in ordinal scale.

Rural school settings and topics. The first multiple correlation was run between rural settings and the appropriateness of topics to be included in teacher professional development. There were three significant results identified; the correlation test between "number of students enrolled" and "strategies to work with teachers from other schools using Internet" produced a small negative correlation of $r = -.18$ which was significant at $\alpha = .05$ ($r\ (331) = .-18$, $p < .05$). From this result, it is concluded that the less number of students the more necessary is to include this activity in professional development, conversely, the more students the less interest in this activity. It may be the case that the more students the busier teachers are and therefore the little interest in a topic that requires time to participate. The second significant positive correlation was between "grades taught simultaneously" and the topic "strategies to work with teachers from other schools using Internet," this was significant at $\alpha = .05$ ($r(322) = .14$, $p < .05$). A possible interpretation is that since teachers are not trained to teach multigrade

classrooms they may consider communicating through Internet with other teachers as a possibility to learn strategies to work in this scenario from teachers who have a similar experience. The third significant correlation resulted between "number of teachers" and "strategies to work with teachers from other schools using Internet." This was a small negative correlation significant at $\alpha = .05$ ($r(316) = .-11$, $p < .05$). A possible interpretation is that the smaller the number of teachers the more interest in learning strategies to interact through Internet with other teacher and vice versa, the more teachers in the school the less interest in interacting with teachers from other schools through Internet. The rest of the correlation results tended to be small, negative, and not significant.

Rural school settings and activities and opportunities. Next multiple correlation test was run between rural settings and the activities and opportunities to be included in teachers' professional development. There was one significant result identified; the correlation between "role at school and extend the training" produced a small negative correlation of $r = -.11$ which was significant at $\alpha = .05$ (r (336) = .-11, $p < .05$). The interpretation of this result is unclear, but it may be the case that the more roles a teacher has at school the less time to participate in extended training and follow up activities. In general, correlation results were small and negative especially in for the "role at school" variable, which indicates the more roles a teacher has the less important the topics were.

Rural school settings and methods to deliver professional development. The third multiple correlation analysis was implemented between the rural settings and methods to deliver professional development. There were five significant results identified. The correlation between independent variable "students enrolled" and the delivery methods "live professional university courses" produced a small positive correlation of $r = .11$ which was significant at $\alpha = .05$ (r (329) = .11, $p < .05$). The correlation between number of students enrolled and "educational websites' was significant at $\alpha = .05$ (r (323) = .-15, $p < .05$). This was a small negative correlation, which indicates that as number of students' enrolled increase the ratings of appropriateness of "educational websites" as a delivery method decreased, and as the number of students enrolled decrease, the ratings for this method increased. A possible interpretation for this relation could be associated to time, having fewer students may allow teachers to have more time to navigate and search for educational websites or/and having more computer available.

A significant negative correlation was found between "number of students enrolled" and "regularly scheduled online collaboration meetings with teachers from other schools" and "number of students enrolled." This was a small negative correlation $\alpha = .05$ (r (323) = .-13, $p < .05$), as these two variables vary together, it could be the case that as the number of students increase teachers have less time and computers available as to schedule regular online meetings with other teachers as part of professional development.

The correlation between "grades taught per classroom" and "educational websites" is significant at $\alpha = .05$ (r (323) = .11, $p < .05$). This indicates that there is a

tendency to consider ‘educational websites” as an appropriate delivery method for professional development as the number of grades taught simultaneously increase. This could happen for the need of teachers to find resources and strategies to work in a multigrade classroom, which is training not provided when studying to be teachers. Another significant correlation resulted between “regularly scheduled online collaboration meetings with teachers from other schools” and “grades taught simultaneously,” significant at $\alpha = .05$ (r (314) = .12, $p < .05$). This is a positive low correlation, which may happen for the need of teachers who teach more than one grade simultaneously to connect with teachers who have similar experiences and may share some strategies to work in a multigrade classroom.

CHAPTER V

QUALITATIVE FINDINGS

Introduction

The second part of this study was comprised by a qualitative section. The central category and themes found in the analysis identify participants' needs and perceptions related to professional development. These needs and perceptions also extend to other areas such as educational policies, academic assessment, and professional recognition, which are beyond the scope of this study but will be acknowledged only briefly.

Qualitative Analysis

Open-ended questions analysis. The method to analyze open-ended questions as well as interviews was constant comparative method described by Glaser and Strauss (1967). The open-ended questions were coded using Excel MS software. The first open-ended question was "Add anything else you think is important to share either related to the topic of Teachers' Professional Development or your experience teaching in rural areas" and 190 participants answered it. The analysis of this question started by selecting single words, sentences, and paragraphs that were meaningful within the research context. Analytic tools described by Corbin and Strauss (2008) such as questioning, comparing and contrasting, guided this selection. Concepts that resulted from this selection resulted in codes such as "mixed-grade classrooms," "rural children readiness," and "sharing teaching strategies." During selective coding, categories were formed based on similarities among codes. Selective codes incorporated a higher level of abstraction, yet still came from the data. The selective coding revealed the following themes: (a)

Rural students' needs, (b) Lack of time, (c) Isolation, (d) Importance of teachers in rural areas, (e) Importance of technology in teaching, (f) Needs for contextualized curriculum according to the rural area, and (g) Microcenters as a model of rural professional development. The second open-ended question was "Add anything else you think it is important to share related to use of online technologies in Teachers' Professional Development in rural areas," this question was answered by 140 participants. The analysis of this question followed the same procedure than the previous question. Some of the initial codes identified were "better learning outcomes," "no one to discuss content," and "complex geography." Codes and categories were compared and contrasted to identify finally five topics (a) Lack of time, (b) Benefits for students and teachers, (c) Frustration in using online systems for Teacher Professional Development, (d) Lack of knowledge to integrate technology into education, and (e) Lack of reliable Internet and updated PCs.

The themes found in these two questions were used to triangulate the themes that emerged from the interview, rather than integrate them into the interviews findings. This was decided because the open-ended questions and interviews imply two different approaches to collecting the data, including differences in interaction with the interviewer and the possible influence of the rest of survey questions in the responses to the open-ended questions.

Interviews analysis. The initial step in the interview analysis was transcribing the audio files using Express Scribe software. Then the researcher re-read the completed transcript without making notes, with the only purpose of remembering the interview. This process was useful to add information to the researcher's notes and memos. The next steps involved more detailed analyzing using NVivo 10 qualitative analysis software. The researcher started by listening to the interviews to remember the tone of the conversation; while doing this, memos where written in NVivo 10 to record the researcher perceptions and mood toward the interview. The memos manually taken during the interview were also added to NVivo 10. The analysis continued with careful reading to identify open codes. These codes ranged from single words to sentences and paragraphs and represented an attribute of a portion of the text. To identify the codes the researcher used analytic tools such as questioning, making comparisons, thinking about the different meanings of a word, drawing upon personal experience, contrasting and looking at language (Corbin & Strauss, 2008, p.69). Codes were sometimes descriptive, where a word or sentence summarized the basic topic of a passage, In Vivo where the words of participants were used as codes, and values where coding represented the interviewee's values, beliefs and attitudes (Miles, Huberman & Saldaña, 2013, p. 6). These open codes were stored in free and a priori nodes in NVivo 10. Further coding was implemented by reflecting on the codes created and condensing them into categories and new nodes in NVivo 10. Through constantly comparing codes, initial categories were formed, then categories and overarching categories. All these codes were stored in NVivo 10 first as free nodes, then as parent nodes, and tree nodes. Finally, using axial

coding method, a connection between initial categories, categories and overarching categories was established, this resulted in the identification of these seven categories or themes: (a) Rural students' needs, (b) Rural teaching challenges, (c) Decontextualized teachers' professional development, (d) Benefits of rural oriented teachers' professional development, (e) Unstable telecommunications, (f) Lack of time, (g) Need for rural teaching oriented educational public policies (See Figure 19).

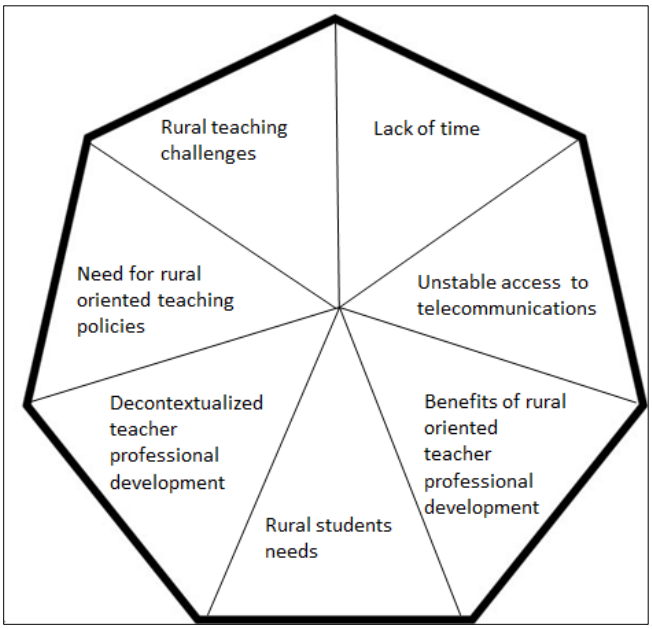


Figure 19 Seven categories or themes identified from the interviews analysis

By contrasting, comparing and condensing the categories obtained and implementing selective coding it was possible to determine the central category or central phenomenon: "acknowledgement and inclusion of rural teaching context" (See Figure 20).

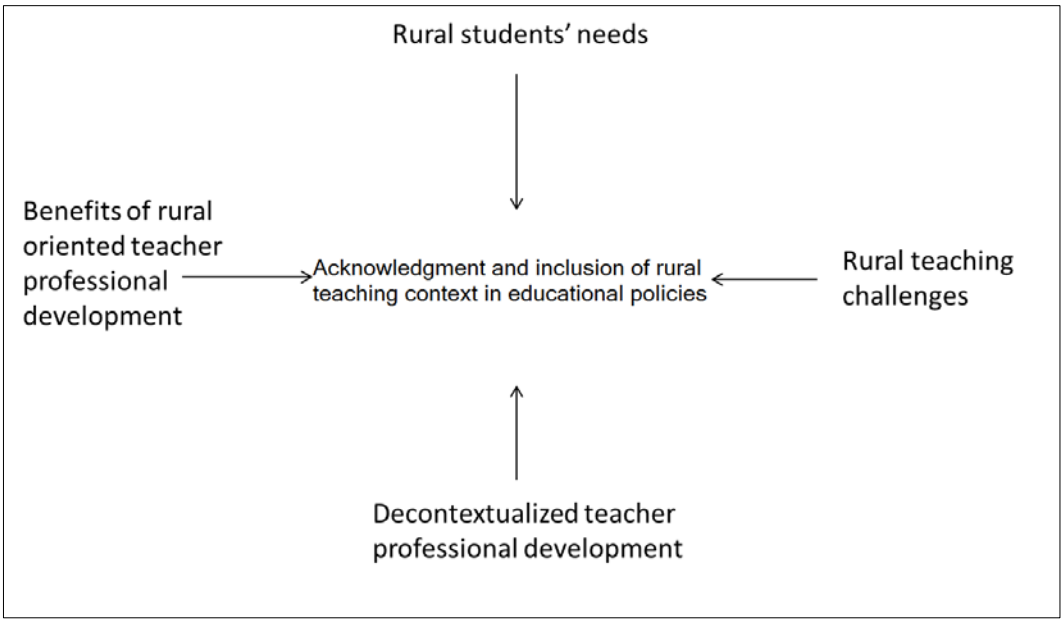


Figure 20 Interviews central theme and categories related

The four themes relate to the central category from different perspectives. The theme *decontextualized teacher professional development* presents an example of how professional programs do not integrate rural needs. The themes *rural student's needs* and *rural teaching challenges* focus on rural teaching needs that according to participants are not considered on professional development. Finally, the theme *benefits of rural oriented professional development* addresses the successful experience of integration of rural characteristics and challenges associated into professional development. The central theme also involves the expressed need of rural teachers to be recognized and valued as educators by educational authorities as well as the community in general. Teachers perceived themselves as being treated as inferior and constantly compared to their urban colleagues, as one of the interviewees stated, "We are the poor relative in the family." This low professional worth is also associated to political events where according to

Joanna “we teachers, we were treated badly during dictatorship”. Another interviewee associated that political period to current teachers’ passiveness, as he commented, “well, some teachers don’t say anything, don’t give their opinion, because for many years we were not allowed to do so, so they don’t talk now”.

Next section explores in more detail the themes found in the analyses.

Themes

Decontextualized teachers’ professional development. When asked about their experience with teacher professional development, a common theme mentioned by teachers was the fact that these programs did not address challenges and needs associated with rural areas, as indicated by Alisson, who said “Many teachers marginalize themselves from this type of professional development model that is not convincing ... no,…or is not accessible, it is not relevant to their practices in rural schools.”

This comment raises the topic of homogenizing the offering of professional development when in fact educational teaching settings vary greatly in characteristics and needs. As Ralph indicates

> The model of rural teacher is very different from the urban teacher, and an urban teacher working in difficult areas is very different from the urban teacher who works in better conditions, both culturally and economically, then to implement or to pretend to have a single model, I think, I would say that is unfair.

Participants resent that these programs do not acknowledge the multigrade modality of rural schools and insist in obtaining results similar to the ones in schools with single grades, as expressed by Joanna, "They should put themselves in our shoes and see that we teach different grades in one classroom." Another difference to consider is the availability of resources in a rural school and how the lack of them may affect the attainability of national curricula objectives. An example of this is presented by Joseph mentioned

> Most rural schools do not have a laboratory and then I need to create some activities based on that reality, create some activities for the kids, so the children can learn the same or almost the same, but the national plans and programs are made for urban schools and then we are the ones who have to adapt to them, that is unfair.

These types of criticisms also reveal the frustration of the interviewees who feel that their needs and challenges are not considered and yet they are expected to obtain similar academic results as the rest of schools. Despite this frustration, participants recognized that there have been improvements in terms of resources allocated for rural schools as well as for teacher professional development, as commented by Alisson:

> Basically, our schools had very few resources to teach, but through the investment of the government on improving the conditions of rural education in Chile, …more investment has made possible to have access to many materials, many elements of education.. and ...that has made the work easier.

During the interviews, participants also identified the Microcenters meetings as the type of professional development that has been effective for them and that has addressed their needs. This is described in the next theme.

Benefits of rural oriented teachers' professional development. When interviewees were asked to describe a positive experience in terms of professional development, they identified the monthly meetings known as Microcenters. These meetings take place once a month and normally involve schools that have one to three teachers. There are different reasons these meetings are perceived as positive. Joanna commented, "It [microcenter meeting] is very beneficial, both professionally and also to befriend colleagues, yes, it is very beneficial." One of the most commented upon aspects of the Microcenter meetings was the bringing together of teachers who have the same rural experience and context, as this provides an opportunity for understanding and support as indicated by Alisson: "[A microcenter meeting] consists of...schools and teachers with the same characteristics as mine where we have the opportunity to one day a month …to get together and work on our stuff and especially share pedagogical practices." Loreen added, "[it] is very useful because we can also see our faults about something we are teaching. We exchange views, obviously that helps a lot."

Collaboration and peer interaction are elements often mentioned as beneficial as indicated by Kay:

> We are always interested in pedagogical reflection and also exchanging experiences ... this is one of the key things for us ... and we try to apply all that we learn in the microcenters meetings in our classrooms…with our children.

These monthly meetings allow teachers to address topics that are particular to their own realities, as Joseph commented:

> [In this meeting] we exchange experiences, reinforce the teaching, we work on projects of common interest we all have, for example, right now we should be working on our PME program...that is the educational improvement program, we have a whole day for us, we work in teams and with other schools, we all have more less a similar reality.

Through working on activities that are pertinent to their reality teachers are not passive recipients of training but co- creators of it. Louise commented on her experience "We have [in the microcenter] a... a technical-pedagogical adviser… they are collecting our concerns and then our issues are addressed in the microcenters meetings." Christine who does not participate of Microcenters meetings also comments upon the importance of considering teachers' opinions regarding professional development options:

> At the beginning... the truth is that it was super-wrong, but it was an issue with the local government that did not listen to what we wanted, we finally managed to talk and obtain the professional development that teachers need.

The connection between professional development offered and rural classroom' needs is essential since teachers expect to gain knowledge and skills that can be transferred to their pedagogical practices, as Louise comments:

> I expect to learn something, even if it is one thing but learning something, and then apply that into my teaching planning, somehow … something, some improvement that is reflected in some way, even one single improvement in the school, those are my expectations.

The improvements are directly related to the needs that teachers identified in the interviews and to the professional development offered through the microcenters. Through the analysis of the interviews, it was possible to find two themes related to needs, rural students' needs and rural teaching challenges.

Rural students' needs. Teachers express their commitment to improve their students' learning. As Joanna commented, "If I have to work at home and this benefits the children, I'm going to do it regardless of whether it is taking extra time," At the same time, teachers acknowledge the challenges that these students face, such as the lack of kinder or pre-kinder training, poverty, sometimes intra- familiar violence, and the parents' lack of academic training in supporting and assisting their children, this was commented upon by Loreen "Where I work is a poor area, people, parents who are farmers and therefore their children also have their difficulties."

These factors create a challenging scenario for teachers to teach, and for students to obtain the learning outcomes expected in national tests. This last element, national testing, is a matter of concern since according to the interviewees it measures the students' learning outcomes without considering the context where they study. As stated by Joseph

> We start from scratch with them [students] then it is difficult to meet the programs objectives, which are made for urban schools. Children from urban schools have …they are in schools that have kindergarten, prekindergarten, and then they enter first year with a solid knowledge base.

Teachers consider this a challenge that is integral to the rural context.

Rural teaching challenges. The questions "How is it like to be a rural teacher?" "What do you expect from teacher professional development?," and "What would you suggest to teacher professional designers?" revealed elements that pose challenges to teachers. The most frequently mentioned challenge was having mixed grades classrooms. This is a challenge because teachers do not receive training to teach in this environment. As commented by Kay, "It is very difficult to plan for three, four grades...and teach them at the same time, nobody prepares us for that." The fact that teachers have few students does not make this less challenging since the main situation is having to focus on students with diverse needs at the same time in the same classroom, as stated by Joseph

> I have four little ones, four in first grade …next year I think three more will enroll ...then you may understand that having three kids or four in first grade and one in 6th grade …because the difference is huge when teaching reading ...that's what Kinder would prevent if we had the pre-school education...Also we have to take care of pupils with learning disabilities.

The participants indicated that this was not only a challenge for teaching, but also a time consuming task, particularly for those teachers who work as principals and teachers at the same time. In practice, this implies doing administrative work, teaching, and planning classes almost at the same time, which can be overwhelming, as Joanna commented:

> Our main function is to teach our children and then when they leave after classes we have this administrative work, but we fail to do it because at that time, we need to plan, and we get tired too.

Teachers indicate that because of doing all this work they do not have time to engage in other activities such as professional development implemented online, especially when these activities they demand synchronous meetings and spending hours during the workweek. This is the case of Kay who is both teacher and principal in the school. “I have tried, but in the end I drop it, but not for lack of interest but because of time, to be there sitting at the computer… it's mostly for lack of time.”

The experience of using an online system was different for Angie who works with three more teachers at school and who has only the role of a teacher. According to her the experience of having an online course had given her flexibility to schedule her tasks; “One can manage their own time to access certain classes.”

The opinion about online systems and lack of time is also affected by another challenge, which is that of unstable telecommunications. More specifically, this refers to unstable access to internet. In this case, participants indicate that an internet signal may

not exit or be too weak. When this happens, participants need to spend more time trying to accomplish their tasks. Kay described, "We don't always have access to Internet. Sometimes is not helpful because you cannot upload information, or the page drops."

The unstable access to internet also increases the time participants need to engage in online activities that require some amount of interaction, even if it is not synchronous, John commented about this "Even more, the signal quality, the cost of equipment, our signal here, I don't know…to participate in forums? in all these things, teleconferencing, it is a signal that does not allow it." Although interviewees recognize the potential of using the Internet to overcome isolation, they also indicate they may not have enough time to participate in activities or programs that demand part of the time assigned for planning or administrative work as stated by Joanna "One cannot sit in front of the computer trying to communicate while the children are in class, they are supposed to work."

Despite the possible advantages to using technology for teaching and professional development purposes, they hesitate to compromise time for more demanding online activities, especially if they do not address their needs and context.

Summary. Through the interviews, participants describe the needs and challenges they face once they are teaching in rural areas. Interviewees perceive that professional development does not properly address their needs, although they recognize that lately there have been efforts from the Ministry of Education to attend to these needs. One of these efforts is the implementation of monthly meetings for schools having one, two or three teachers. Participants perceive this type of professional development as

contextualized to their needs. This is in part because they can interact with peers having similar challenges and experiences. As a result, they feel more prepared to implement activities and strategies that address what their students need and therefore improve their learning; Figure 21 shows these perceptions and needs. This study identified the need of rural teachers to be acknowledged and valued professionally; it also reveals their commitment to their students' learning and their frustration towards an academic structure that it is perceived as unaware of particular challenges associated to rural life.

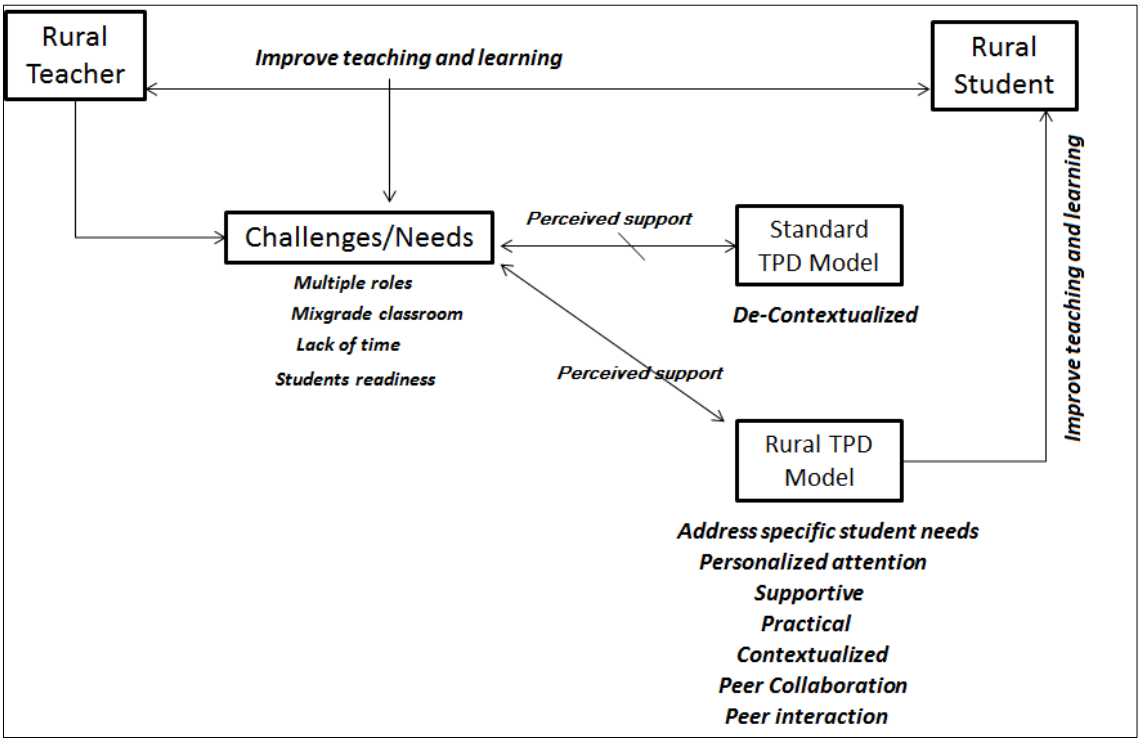


Figure 21 Needs and perception of professional development.

CHAPTER VI

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to examine the needs and perceptions of rural teachers from Chile in relation to teachers' professional development and the potential role of technology in its implementation. The findings indicate that the type of professional development that rural teachers needs is related to ongoing support of their teaching practices.

Discussion Research Question One

What are the levels of teachers' preferences and needs for topics and methods of delivery that are identified by rural Chilean teachers for their continued professional development?

Rural teachers were asked to rate the level of appropriateness of seven different professional delivery methods. On average, they rated "live professional university courses" as *very appropriate* while the other methods were rated as *appropriate* (See Appendix M). This preference for "live professional university courses" could be explained by other factors mentioned during the interviews such as the need to meet and interact with peers face to face, as expressed by the interviewee Loreen: "When I need some teacher professional development or teacher training I prefer face-to-face meetings rather than through the web." Another reason could be the difference in the type of certification provided by each delivery method, as suggested by Joseph who said, "Most teachers want to study and improve professionally… I'm talking about, graduates, and postgraduates' degrees."

These degrees are implemented through “live universities courses” and in some cases are offered through flexible schedules so that students can attend classes every weekend. This is more convenient for rural teachers who do not have time to travel to attend classes during weekdays. This was the case with Joseph: “I studied for a Master’s in History and I had classes every Friday evening and Saturday morning, so I travelled every Friday to be back on Saturday…this for two years."

While academic degrees have also started to be delivered online, participants in the study indicate that they do not have stable enough access to the Internet to participate in these. Another aspect mentioned by teachers was the lack of time to participate in online activities during weekdays, which can also be hard to complete, as Alisson shared:

> I took the online course, but [it] was too much, there were things they asked me to do with other colleagues, it was impossible … they couldn’t, it was difficult, they couldn’t meet at the same time, it was chaos, in the end it became something … I was drowning in it.

Nevertheless, online delivery methods such as online courses, educational websites and online meetings are rated as *appropriate.* It may be the case that online delivery methods are *appropriate* when participants have more stable access to the Internet and are not the sole teacher at school and thus have more time available to study. This was the case of Christine, a principal who was studying for an online Master’s degree and worked in a school with 11 teachers. According to her,

> To be able to communicate from one island to another one and … to know what is happening in the other place… it is fantastic, or maybe talk about what you have learned and how you applied it ... only technology can do that.

The opinions of teachers about delivery methods tend to be polarized, i.e. they tend to prefer either face-to-face methods or online delivery methods but not a combination of both. One is likely to find teachers who consider it *appropriate* to deliver professional development through online professional courses and educational websites, but less likely to find participants who consider online professional courses and live professional university courses *very appropriate* as delivery methods. Teachers' ratings to delivery methods also pointed toward a positive relationship between online delivery methods and mentorship from an experienced teacher. The researcher found an online initiative implemented by the Ministry of Education where teachers who have been awarded teaching excellence recognition share their experiences online. Yet it is not clear if this initiative is the reason why teachers favor a relationship between online systems and mentorship, since the initiative was not mentioned by any of the participants. Another possible interpretation of this relationship is that participants expect personalized attention when being in online systems, as was the experience of Kay who commented about her online course:

> We could email the teacher through the forum, email him any questions you would like to ask … then I emailed him in the morning and I would get the

answer in the afternoon or evening, we knew we could count on him and he could read our questions.

The differences in ratings given to methods of delivery were not necessarily associated with regional location even though some groups reported more adverse conditions in climate and access to telecommunications, which could have influenced their opinion. Nevertheless, the Far North/South group rated the delivery method "live professional university courses" differently where ratings concentrated mainly in the *very appropriate* category, while the Center and South groups concentrated 50% of the ratings between *appropriate* and *very appropriate*. Since this difference is not attributed to regional location, it is assumed that there are other elements that could explain this difference. In the case of the Far North/South group, the interviews conducted revealed positive experiences with face-to-face training especially when private businesses, such as mining companies in the north of the country, supported them. This sentiment was expressed by Kay, from the Far North/South group, who commented, "[the] private company has resources, and then it is easier to access and use those resources to improve, so in general one has big expectations, because they provide very good training and have very good results for us professionally and for our students." Louise, who is also from the Far North/South group, commented about her experience in monthly face-to-face meetings: "I think every year we've improved as a group, we've seen great experiences, we shared experiences too, so ... for me the Microcenter is outstanding in this regard." This participant also shared her experiences with online courses: "They

were in general the same, you know, you have to read something you have to implement a task from that, and I could do it ... but to me it seems very poor."

Consequently, positive experiences with face-to-face training and discomfort with online courses may influence in part the tendency of the Extreme North/South group to rate "live professional university course" as *very appropriate*.

Finally, the fact that this sample of rural teachers rated all the methods to deliver professional development between *appropriate* and *very appropriate* indicates a positive approach to professional development as a means to improving professionally regardless the method of delivery. As Joseph commented during the interview, "I find that the development of teachers has to be … the teacher has to develop and improve ... a teacher is a source of knowledge that has to ... has to handle a lot of knowledge, therefore a teacher cannot be ignorant especially of what he teaches."

In response to the question regarding topics to be included in professional development, the topics "teaching an indigenous language" and "strategies to work with teachers from other schools using the Internet" were rated on average as *necessary* while the other seven topics were considered *very necessary* (See Appendix N). The differences in ratings given to these topics could be explained by the nature of the topics themselves. Some of them are related to address social needs or issues such as "needs of students with disabilities" and "students' academic performance" while other topics are more related to academic improvements that can be desirable but not necessarily essential at the moment. An example of this is the topic "strategies to work with teachers from other schools using the Internet," rated as *necessary*. Even though this is a positive

approach it indicates that this topic is not a priority as other topics are. During the interviews, teachers acknowledged the usefulness and importance of technology. However, they also indicated they do not have time to spend on the computer. It may be the case that teachers do not perceive the potential of technology as a tool that can host solutions for needs such as working with students with disabilities but, rather, limit their use of technology to obtaining academic material and eventually communicating with others.

In relation to the topic "teaching an indigenous language" and its rating as *necessary* but not *very necessary*, it could also be the case that national educational programs already support this teaching through external help so that teachers may not need training for this, as Kay commented:

> Schools where 80% of the students are part of an ethnic minority group ... by law must necessarily participate in projects in bilingual education which are focused on the preservation of the language ... then we have a person from Atacama City who is endorsed by the indigenous community to come and teach cultural heritage. The teacher in charge helps with the teaching, planning, control group, as if it were another subject.

Even though all the groups rated this topic as *appropriate*, the South and Far North/South groups reported fewer differences in the rating than the Center group. This study found that the differences in ratings given to the topic "teaching an indigenous language" were influenced by the regional location of the school. More specifically,

ratings varied depending on whether the school was located in the Center group or in the South group. This is consistent with demographic data in that the largest number of indigenous people is located in the South group while the smallest is located in the Center group.

In relation to the topic "needs of students with disabilities," there was more agreement among teachers to rate this topic as *very appropriate*. This preference can be explained by comments obtained from the interviews where participants indicated that students with disabilities who are not diagnosed as specifically having a learning disability do not receive attention other than the teachers' help. Joseph commented on this:

> The student who has no big problems...who has a specific disorder such as ... read ... a student who has difficulty reading the full word or invents words while reading…That student is not classified as having learning problems, because he has that little problem...no more than that...there is no attention for those students in rural schools.

Kay added that, in her experience,

> If you have children with learning disabilities you cannot always ... because of the number of children, apply to programs such that allow us to diagnose ... that is one of the big flaws in the rural education program. In my case I have six students ... then it is more difficult to apply to a project to finance a special

> education teacher, it is very expensive ... and the number of hours and the number of children, we have no means to support the application.

During the interviews, teachers acknowledged the existence of a national initiative to assist students who may have learning disabilities; however, it is unclear how this program approaches cases such as the ones mentioned by Joseph. Even though this is a national initiative, its implementation depends on local government and its own resources.

In relation to the topic "parent and community involvement," this was the only one that did not obtain any rating in the *not necessary* category from any of the regional groups. Interviewees' experiences complemented this result, as Kay indicated:

> Most parents are shepherds and they do not provide support and knowledge, it makes teaching harder, we face very lonely children because parents, because they lack the knowledge, parents have very low education and some are restarting primary education. Then … lack of knowledge of them ... to support their children also hurts pedagogical practice.

Another interviewee commented on the socially complex scenario that his school faces when students come from culturally different places. According to the experiences of Ralph,

> There is a strong culture shock, and they [the students from big cities] are much more complex, violent, come with major shortcomings … come as families, we

feel, are like running away from the big cities, and these families care little about their children.

Finally, the topic "student performance assessment" was rated as *very necessary* on average, which is consistent with the interviews in which teachers acknowledged the importance of students' academic success, especially considering that their students will move to other schools to pursue further education. As Joanna commented, "I wanted the kids to learn Science, because I knew they would be leaving the next year for another school in another city."

In conclusion, rural teachers tend to favor face-to-face methods to deliver professional development. This does not imply that they are opposed to online delivery methods, yet what they regard as possible obstacles are lack of time due to having multiple roles at school, unstable access to the Internet, and the type of online activities which can be too time consuming.

With respect to topics, teachers consider all the topics presented as *helpful*. However, there are some topics that are especially important to them, such as those related to students' learning, personal and family issues, and disabilities.

The Ministry of Education has implemented online resources to support teachers' mentorships and the exchange of teaching practices. There is also an educational bill being implemented to integrate students with disabilities. Yet more research is needed to determine the success of these initiatives in rural schools.

Discussion Research Question Two

Are the principles of adult learning paradigm for the design of teachers' professional development represented in the preferences and opinions of teachers in Chile?

To answer this question rural teachers were asked to rate the level of importance of including opportunities and topics based on adult learning principles in professional development. These opportunities were to (a) "collaborate with other teachers," (b) "learn topics related to my school and grade needs," (c) "learn experientially," (d) "learn practical strategies and ideas that will be immediately applicable," (e) "learn through experiences that involve my perspectives and values," (f) "extend the training through follow up activities that include practice of the content and techniques," and (g) 'reflect on my practices with other teachers." Teachers rated all these activities as *very important* (See Appendix M).

This result supports the integration of Knowles's adult learning theory to teachers" professional development. Further information provided in the interviews emphasized the importance of these opportunities and activities for teachers. However, teachers also expressed that these activities are not typically part of professional development – something which leaves them feeling frustrated. Thus, teachers see themselves as passive recipients of professional development programs and, contrary to what is recommended in the literature, do not feel that they determine their own learning needs (Knowles, et al., 2005, p. 34). Teachers expressed their discontent with

educational policies and measurements that do not include or consider rural challenges such as multigrade classrooms, lack of Internet access, and rural students' needs.

Despite these comments, teachers acknowledge the efforts of the Ministry of Education in Chile to provide them with resources to teach. Most important of all, they appreciate the implementation of face-to-face meetings named Microcenters, where teachers from small schools (normally one to three teachers) meet monthly. Teachers describe these meetings as instances where they exchange and reflect on their teaching practices, collaborate to create lessons appropriate to their context and students, and share with peers who have similar experiences. These meetings promote adult learning principles such as having a climate in which participants feel respected, which encourages their active participation, and builds on their experiences (Knowles, et al., 2005). These meetings are also seen as a chance to overcome the regional and professional isolation in which rural teachers live. As a way to enhance Microcenter meetings, teachers expressed their openness to using the Internet to communicate between monthly meetings. Since Microcenters are meetings for small rural schools, it is unclear how bigger rural schools exchange teaching practices.

In conclusion, teachers consider it *very important* to integrate adult learning principles in the design of professional development. These principles represent the inclusion of rural teachers' needs and challenges associated with their own contexts. The Ministry of Education has already implemented monthly meetings known as microcenters that enclose the principles of adult learning. Despite this initiative, rural teachers indicate their frustration since other professional programs do not address their

needs within their specific context. This frustration is also related to the one-size-fits-all application of national academic standards and policies. According to teachers, these policies seem to assume that all rural teachers attend one grade per classroom, students may have pre-school training and teachers have one teaching role assigned – all this in stark contrast to the reality that rural schools may have multigrade classrooms, students with no pre–school training and teachers who play both teaching and administrative roles at school.

Discussion Research Question Three

What are the barriers and benefits perceived by rural teachers from Chile in the use of online resources to deliver their professional development?

The section about benefits was addressed in two parts, one related to the helpfulness of activities implemented online and the other one about logistical benefits of using online systems to deliver professional development.

With respect to activities, teachers were presented with four options: (a) "exchange teaching materials online with teachers from other schools," (b) "exchange feedback online about classroom management with teachers from other schools," (c) "work in educational activities online with teachers from other schools," and (d) "communicate with other teachers online about general teaching practices and experiences." All these activities were rated on average as *very helpful* for teaching practices (See Appendix N). This perception is supported by Kay who commented, "Connecting online is very favorable for us, we have the possibility to interact with other teachers, and in the case of children it is an attractive tool." This result is consistent with

Rhoades (1993), cited early in this study, who indicated that sharing resources and providing professional support are some of the multiple ways in which online learning communities can help. These communities provide a "continuous instance where rural teachers offer each other moral support, intellectual and academic help, and solid friendship" (Noddings, 1992, p. 179).

An analysis of the relationship of these activities shows a tendency of teachers to rate them similarly i.e. when they rate one as *very helpful* they have the same opinion about the other one. In some cases, there are discrepancies in ratings that could be attributed to elements such as time available and access to the Internet. In relation to time available for online activities, Joanna commented: "When there are urgent things that you will need to do…it is ok, but I would not use the Internet to chat or anything like that, it has to be professional, yes, I would use it professionally." So it is likely that some participants would consider it *very helpful* to exchange teaching materials online but just *somehow helpful* to communicate with other teachers online about general teaching practices and experiences. Another aspect that may influence the rating of these activities could be access to the Internet, as Joseph mentioned in his interview: "Not all rural schools have the Internet … I have it sometimes when I am lucky and it's raining and windy so we have some coverage."

Finally, the activity that teachers most often agreed was *very helpful* for their teaching practices was the exchange materials online, this was supported and contradicted in the interviews where Kay commented

> We teachers try to share through email, but not all teachers, not all of us share our stuff ... we share our experience, but creating material is hard work ... so to give it to another teacher... sometimes it feels that you're making the job for the other teacher.

In relation to the logistical benefits of implementing professional development online, teachers agree on average with the items "cost effective," "easy to incorporate into my daily schedule," and "saves time" as being benefits. Regarding the cost, interviewees indicate that the local government assumes the cost of the Internet service and professional development; however, this will depend on its financial resources. Consequently, it may be the case that when teachers assume the partial or total cost of participating in professional development, it is more cost effective to participate in an online than a face-to-face program.

With respect to the item "easy to incorporate into my daily schedule," one interviewee indicated that she valued the opportunity to participate in activities at her own pace. However, another interviewee held the view that this would depend on the amount of work and the type of activities she had to participate in. According to her, synchronous activities were not adequate because of her lack of time to arrange meetings. This last comment is also linked to the item "saves time," in that it may be the case that professional development implemented online saves time compared to travelling to attend professional development programs; however, the number and type of activities implemented online may change the opinions of some teachers.

Participants in this study strongly agreed with "connecting with other teachers and more variety of leaning activities" as benefits of implementing professional development online. It is feasible that by connecting with others through online professional development teachers could experience new approaches to problem solving which according to Lave and Wenger (1991) cited early in the study supports the development of personal skills. Connecting with others may also help to overcome the regional isolation they live in. As Kay commented in her interview, "rural teachers sometimes lack the support, we work very much alone." Angie in turn stated, "Rural teachers are too often on their own, with little upgrade, little support of the administration, someone who would ask, "What do you need?" This situation resembles what was identified earlier in this study as professional isolation (Perlman and Peplau, 1981), where the networks are deficient either quantitatively or qualitatively. This seems to be the case of some rural teachers. Regarding the opinion about "more variety of learning activities," it is unclear what kind of learning activities teachers expect to have in an online system or how different those would be from face-to-face professional development. However, participants in the interview acknowledged they would like to have activities where they can interact and have more individualized attention. Further research is needed to examine this result.

Apart from benefits, teachers were also asked to identify obstacles to the implementation of professional development online. Teachers from the Far North/South and the South group cited "lack of Internet" service as a *big obstacle* while the Center group rated it as an *obstacle* as well (See Appendix N). The analysis concluded that the

differences in rating were influenced by the school location. The Far North/South group, as already stated, contains areas that are geographically isolated and have weather conditions that can affect the availability of working Internet connection. The fact that the Center group includes the capital of the country as well as major urban areas may be the reason why rural schools there have better access to the Internet; however, they too still consider the lack of a working Internet connection to be an *obstacle*, and this is emphasized by a comment made by John who works in a rural school near the capital:

> Well, unfortunately, the issue is very complicated, in the rural areas from the metropolitan region, there are sectors that may not even have telephone access, and it strikes me that the situation in other regions must be much more complex.

The Chilean National Census of Technology and Education (2012) indicates that 47% of rural schools have access to the Internet compared to 91% of schools in urban areas. This Internet scarcity at schools results in teachers using Internet service at their own home. In the words of one participant in the survey, "my school does not have Internet, but I subscribed to a plan and work with my students when the signal allows it, that is why I realized how important it is to be connected nowadays."

"Lack of utilities" is an item identified as *somehow obstacle*; however, there are differences between regional groups, specifically from the Far North/South group, which rated this item as an *obstacle*. As indicated previously, this group has schools located in areas where the geography and climate tend to be extreme and therefore access to electricity can be limited. Based on the researcher's personal knowledge of these areas,

some schools use a power generator to produce energy. In this case, its use depends on the resources available to obtain fuel. Therefore these schools tend to restrict the use of the generator to specific hours of the day as well as the number of computers in use at any given time.

With respect to the lack of computers, opinions vary between *no obstacle* and *big obstacle*, but the tendency among teachers was to rate this item as an *obstacle*. Contrary to this result, the Chilean National Technology and Education Census (2012) indicates that computers have doubled in numbers in the last 3 years. The interviews led to some new insight into this contradiction, indicating that the issue may not be the actual lack of computers but their state of repair. As Joseph commented in his interview,

> We got the computers from the Ministry of Education, but then they should give support to the computers now and then… rural schools are forgotten, as I said … my school, during the whole year no one has visited the school to provide technical support to the computers ... moreover, there is one which is broken.

Finally, "absence of technology experience" was rated as *somehow obstacle*; however, the Far North/ South group rated it as an *obstacle*. The reason of this rating is unclear, though the interviews shed some light on it. Perhaps this technology experience-related rating indicates not an absence of experience but simply a lower level of technology skills. As Allison stated in her interview, "I believe that technology, although it was hard for me to learn it, and I don't handle it as well as my colleagues, but I still I think it plays an important role." To this respect, the Chilean National Technology and

Education Census (2012) reports that the most common technology-associated activities among rural teachers involve use of the Internet to send and receive emails, search for information, and read news or items of interest. Survey participant John acknowledged the lack of skills of some teachers to handle equipment such as projectors or Smart Board, and voiced his concern about novice teachers who do not know how to integrate technology into education:

> I partly understand the apathy of former teachers to use the Internet. What I cannot understand is that new teachers don't know how to use this tool to incorporate it into their professional work. That is the doing of the universities that allow professionals to graduate without technology skills.

This comment relates to Arnold et al., (2005) concern about the need to identify the role of higher education in improving the quality of rural teachers.

To conclude, teachers consider it on average as *very helpful* to have online activities that support teaching collaboration, reflection and help to overcome professional/ geographic isolation. However, their participation in these activities can be limited by lack of access to the Internet and available time.

It is believed that when teachers assume the cost of professional development it is more cost effective for them to participate in online courses. Teachers also express that being able to manage their own time is an advantage of online courses. Yet if a course requires activities that demand too much time, they may not participate in it.

The lack or unstable access to the Internet is identified as a *big obstacle* and may occur because of the climate or remote geographic location. It is also possible that the type of connection is too slow. Finally, the cost of Internet service may be an issue where funds are lacking. In some cases, rural teachers assume the cost of the Internet connection themselves, and it is unclear whether they are reimbursed or receive any subsidy from the local government. The lack of Internet service may limit the access to online professional development and to online resources and initiatives implemented by the Ministry of Education.

The lack of an electric power grid is identified as a *big obstacle* in regions located in the extreme North and South of the country, again, due to inclement weather and rough terrain. These are areas where climate and geography make difficult the access to electricity and telecommunications, consequently services like electricity may not be available affecting the use of computers and the Internet when available.

With respect to access to computers apart from the issue of scarcity, teachers emphasize insufficient technical support from the National Educational Informatics Program (Enlaces). It is not clear how this support is currently managed or what the relationship between the Enlaces program and the local governments is.

Finally, teachers indicate that they have technical skills but may not have enough expertise to keep up with the continuously evolving hardware technology and updates in software. Further research is needed to investigate the existence and characteristics of technology and instruction programs for pre-service and in-service teachers.

Discussion Research Question Four

What is the relationship between rural schools settings and rural teachers' preferences for professional development?

Rural schools have unique characteristics such as a small number of students enrolled, multigrade classrooms, fewer teachers working at school, and teachers working in a teaching and administrative position at the same time. The researcher was interested in studying the correspondence between these rural characteristics and the teachers' preferences for professional development.

The study found a small *negative* correspondence between the "number of students enrolled" and the level of interest among teachers in "strategies for working with teachers from other schools using Internet." In this case, as the number of students enrolled increases teachers show less interest in such strategies. A plausible interpretation of this finding is provided by the interviews where teachers indicate that they do not have time to be online for long periods. As Joanna commented, "one cannot be sitting in front of the computer trying to communicate while the children are in class, you're supposed to work." As this correspondence identified is small, one can find cases where a school with a large number of students may have teachers interested in strategies to work with peers from other schools.

The study identified a small *positive* correspondence between the number of grades taught simultaneously and the interest in learning strategies to work online. Thus, as the number of grades taught simultaneously increases the more interest in learning strategies to work online with other teachers and vice-versa. It is necessary to mention

that this is a small correspondence and there are cases showing an inverse trend. As for the teachers who teach more than two grades simultaneously and have an interest in learning strategies to work online, John commented in his interview: “No one prepares us to work in multigrade classroom ... so it's good to share with colleagues from other schools, ask how you did that, …or this is how it worked for me.” Thus, it may be that the complexity of teaching more than two grades simultaneously encourages teachers to seek advice and help from other teachers through online systems.

A small *negative* correspondence was found between the number of teachers at a given school and strategies to work with teachers from other schools using the Internet. A possible interpretation is that the smaller the number of teachers the higher their interest in learning about interacting through the Internet with other teachers. A vice versa, the more teachers in the school the less interest in interacting with teachers from other schools through the Internet. Since this is a small correspondence, it is possible to find teachers who show an interest in working with teachers from other schools through the Internet even when they work with many more teachers at school.

Another finding shows a small positive correspondence between the preference for live professional university courses and the number of students enrolled. Thus, as the number of students increases so too does the interest in “live professional university courses” increase; and as the number of students decreases the interest in “live professional university courses” decreases as well. This is a small correspondence; consequently, it is possible to find teachers who are not interested in “live professional university courses” even when the number of students enrolled is large. For those

teachers who show interest in live professional university courses and work in a school with a large number of students enrolled, it may be the case that the more students the more diverse are the learning characteristics and needs. Hence, the need for teachers to take professional development that prepares them to address those diverse needs, as commented by Joseph in his interview: “It all depends on the situation that I have to face. Depending on how it happens I'm taking courses that will help me improve.”

Another small *negative* correspondence identified is the one between the number of students enrolled at school and the preferences for educational websites as a delivery method for professional development. Preferences for this method decrease as the number of students increases, and vice versa. A possible interpretation of this result is that having fewer students teachers may mean having more time to visit educational websites. This small correspondence indicates that there are teachers who may not be interested in educational websites even when the number of students enrolled is small.

Another small positive correspondence was found between multigrade classrooms and educational websites. As teachers teach more than two grades together, their interest in educational websites increases; conversely, as the number of grades taught together decreases the interest in educational websites decreases too. This is a small correspondence so it is possible to find teachers who teach more than two grades simultaneously and do not show interest in educational websites. As for those who show interest in them and have more than two grades, this could be a result of teachers not having formal training to teach multigrade classrooms; therefore, they need immediate support to deal with this challenge. It may be that educational websites are a reliable

source for finding material pertinent to multigrade teaching. The researcher found templates and multigrade lessons available on the Chilean Educational Website as well as successful rural teaching experiences shared.

In conclusion, the correspondence between rural school settings and preferences for professional development tends to be small. However, it reveals some tendencies between the number of students enrolled, number of teachers, multigrade classrooms and the interest in using online systems. Teachers show less interest in working with other teachers online as the number of students enrolled increases, which can be attributed to the need manage large and mixed classrooms, which impacts the amount of time available to be online. However, teachers' interest in learning strategies to work online with other teachers as well as visiting educational websites, changes when having to teach multigrade classrooms. As teachers do not receive formal training to manage multigrade classrooms, they might take advantage of online resources to find support.

Recommendations

The purpose of this study was to examine the needs and perception of rural teachers in relation to professional development and the role of technology in its implementation.

Since the participants of the study were a small number of rural teachers, the results are not certainly generalizable to the larger population of rural teachers countrywide. Nevertheless, some opinions and tendencies were identified that might be used to better support the resolutions of rural school administrators.

Rural teachers acknowledge the importance and need of professional development to improve professionally and above all to favor their students´ learning. However, teachers in this study repeatedly expressed these programs do not fit their needs and challenges associated with rural contexts leading them to feel frustrated and unrecognized professionally. It is recommended that designers of professional development identify the characteristics of rural teachers as learners as well as their social context. This would not only allow designing supportive and rural oriented professional development programs but also would increase teachers' sense of inclusion in academic decisions. To this regard, teachers indicated they do not feel valued professionally since their needs are not addressed; they also express their concern about being expected to achieve similar goals as their urban colleagues who have a different context.This leads them to perceive educational authorities and educational policies as unfair. It is unknown the leadership paradigm that guides educational decisions and policies in Chile, however, it is recommended to revise the leadership pattern assumed to work with rural educators and the role they have been given in the process of building educational policies.

It is also recommended to verify the status of schools located in the extreme North and South of the country since they seem to be more isolated and having less access to telecommunications. At the same time these areas seem to have younger and less experienced teachers who may need more support but have less access to it.

In relation to the use of online systems, while teachers agree it is an option that can help them to communicate with other teachers, they identify the lack of Internet as a

big obstacle. Therefore, it is less likely that they would participate in initiatives such as formal online courses; this is not only due to lack or unstable Internet connection but also because of the lack of time. This is specially an issue for those teachers who have a teaching and administrative position at school.

While formal online courses may be difficult to implement initially, online learning communities could be an option to support teachers professionally considering their interest to use online systems to collaborate with each other. Therefore, it is recommended to support the implementation of online learning communities since they can provide teachers with an instance to communicate, reflect and collaborate despite the distance. Some requirements for the implementation of online learning communities are to invite rural teachers to participate in their design phase, include a variety of activities that encourage collaboration, be time efficient and have reliable Internet connection.

It is also recommended to revise the funding that covers attending professional development. In this study, some teachers indicated it is paid by the local government while in other cases teachers' pay for it. Teachers may not attend professional development programs when they are required to pay for it.

As far as technology, it is recommended to revise the policies of technology support provided to rural school. Teachers reported lack of contact with the program Enlaces identified as responsible for this task. It is unknown the relationship between rural schools and Enlaces program, moreover teachers seem to be unaware of resources and initiatives provided by this program.

In relation to teachers' technology experiences and their integration into education, this study was not oriented to identify the level of technology skills. However, the findings of the study show an apparently low level of technology skills in experienced and novice teachers. It is recommended to revise teachers' training curricula in universities, prepare future teachers to integrate technology into education based on learning theories and principles, ensure their computer literacy, and prepare them to be informed technology users and consumers. A final recommendation in the same line is to prepare future teachers for to teach in urban and rural contexts.

Summary. The purpose of this study was to examine the needs and perceptions of rural teachers from Chile in relation to teachers' professional development and the potential role of technology in its implementation. The findings indicate that the type of professional development that rural teachers needs is related to ongoing support of their teaching practices.

In relation to technology, teachers are opened to participate in professional development that integrates collaboration, reflection and above all considers their rural context. Although rural teachers see the potential of online systems to overcome isolation and to collaborate and reflect with peers, the study's results identify the lack or unstable access to Internet. Even if this resource were available it is not possible to predict the use of it since teachers also indicate lack of time as a factor that may impact their use of technology.

More research is needed to identify the design that guides current professional development for rural teachers, the current training of future teachers to integrate

technology into pedagogical practices, the professional isolation in rural areas and the impact of professional development programs on the learning of rural students since the ultimate goal of these programs is to enhance students learning outcomes.

Limitations, Strengths and Significance of the Study

Limitations of the study include: (a) small response rate, (b) participants' self-selection to be part of the study which can lead to have some groups under or over represented, (c) the researcher had no control over the context and settings where teachers answered the survey, depending on the conditions of it this may have affected the approach to responses, and (d) lack of teachers demographic data such as age and gender to compare with demographic data obtained.

Strengths identified include (a) responses from all administrative regions, school administrations, and school sizes. The use of mixed method design, i.e., qualitative and quantitative data collected allowed the contrast and support of findings using both types of data adding credibility to the study. Finally, the results of the study are consistent with the data presented in the following reports: chilean technology and education census (2012) and Unesco report Background and Criteria for Teacher Policy Development in Latin America and Caribbean (2013).

As part of the significance of this study, it supports the incorporation of communication and instructional technologies as a means of improving the quality of training for rural Chilean teachers. It also provides support for incorporating a more effective design and implementation process for delivering training for teachers in rural

Chilean schools by eliminating elements that can hinder the implementation of professional development programs in either face-to-face or online formats.

Finally, this study supports the use of the Internet and related technologies to conduct research involving rural and distant participants and settings.

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APPENDIX A

Survey cover letter-email English version
Dear Teacher

My name is Paola Pérez Guarda, I am currently a Chilean Doctorate student at Texas A&M University in the area of Educational Technology. As part of my graduation requirements, I am conducting a research study related to Teacher Professional Development Programs in Chilean rural schools. Part of my professional experience in Chile involved working with rural teachers, consequently I am aware of the unique characteristic of rural schools.

This research study serves two primary purposes:

- Identifying your needs of teacher professional development and
- Identifying benefits and problems to use technology to design and implement teacher professional development in rural areas.

I am asking you to complete an anonymous online survey to give your opinion about this topic. The findings from this survey will be useful for future reference and consultation for educational policymakers, administrative personnel, and yourself. Consequently, your response is very important to make your opinion known.

Completing the survey should require 20 minutes approximately. Although your participation is voluntary, I very much appreciate your completing the survey as soon as possible. This study includes related phone interviews with participants who volunteer for this additional phase. The interview is not required for completing the survey. If you are interested in participating in the interview, please indicate it in the question that follows up the end of the survey.

CONFIDENTIALITY

Paola Perez Guarda will be the only one having access to your answers. If you have any question about the study please contact Paola Perez through email chola120@tamu.edu

APPENDIX B

Survey cover letter
Estimado Profesor/ Profesora

Mi nombre es Paola Pérez Guarda, soy alumna chilena de doctorado en educación y tecnología en la Universidad de Texas A&M, USA. Como requisito final del doctorado estoy realizando una investigación sobre los Programas de Desarrollo Profesional Docente en Chile específicamente en el diseño e implementación de Programas de Desarrollo Profesional Docente para las áreas rurales de este país. Parte de mi experiencia profesional en Chile involucra el haber trabajado con profesores que se desempeñaban en el área rural y es por esta razón que estoy al tanto de las características únicas de este tipo de escuelas.
La investigación que estoy llevando a cabo tiene 2 propósitos fundamentales:

- Identificar las percepciones y las necesidades que existen frente a los actuales Programas de Desarrollo Profesional Docente e
- Identificar los beneficios y las dificultades de utilizar la tecnología en los programas de Desarrollo Profesional Docente en áreas rurales

La invitación es a que usted complete una encuesta en línea totalmente anónima, en la que manifestará su opinión frente a los temas ya planteados anteriormente.
Los resultados de esta encuesta serán de utilidad para futuras referencias y consultas de docentes y administrativos en el campo de la educación
El contestar le tomará 20 minutos aproximadamente. Aunque su participación es voluntaria, apreciaría muchísimo que completara la encuesta a la brevedad posible.
Este estudio también incluye una entrevista telefónica de carácter voluntario y anónima. La entrevista telefónica no es requisito para completar la encuesta en línea. Su opinión sin duda será de gran aporte para llevar a cabo esta investigación.
Si está interesado (a) en participar en esta entrevista por favor indíquelo en la pregunta que sigue una vez contestada la encuesta en línea.

CONFIDENCIALIDAD

La única persona que tendrá acceso a la información entregada será Paola Pérez Guarda, investigadora principal. Si tiene preguntas respecto a este estudio puede contactar a Paola Perez Guarda a través de su email chola120@tamu.edu

APPENDIX C

Interview cover letter-email English version

Dear Teacher

Thank you for volunteering to participate in the the second part of the study about Teachers' Professional Development Programs in Chilean rural schools conducted by Paola Perez Guarda doctoral student at Texas A&M University.

The objective of this research interview is to identify your perceptions and needs when participating in Teachers' Professional Development.

The findings from this interview will be useful for future reference and consultation for educational policymakers, administrative personnel, and yourself. Consequently, your response is very important to make your opinion known.

The interview will be conducted over the phone, skype or any other similar system you think appropriate. For analysis purposes the interview will be recorded. Your participation will be anonymous; you can withdraw from this interview at any moment, this information will be keep confidential. The records of this interview will be deleted once the study is over.

In order to participate in the interview please, respond to this email indicating your contact information, either phone number, skype or other system. If you choose phone number (s) include the area code and the time and date you could be contacted.

Thank you for your participation.

Confidentiality

Your identity will be kept confidential. If you have any question regarding this interview please contact Paola Perez by email chola120@tamu.edu

APPENDIX D

Interview cover letter-email Spanish version

Estimado/a Profesor/a

Gracias por participar voluntariamente en la segunda parte de este estudio sobre los programas de desarrollo profesional docente en las escuelas rurales chilenas.

La entrevista será conducida por Paola Pérez Guarda, alumna de doctorado de la Universidad de Texas A&M. USA.

El objetivo de esta investigación es identificar sus percepciones y necesidades al participar en programas de desarrollo profesional docente. Los resultados de la entrevista serán de utilidad como futura referencia para administradores y profesores. Por lo tanto su opinión es muy importante.

La entrevista se hará a través del teléfono, Skype u otro sistema de comunicación que usted considere apropiado. Para poder implementar el análisis de esta entrevista será necesario grabarla, sin embargo su participación se mantendrá anónima, su nombre no será mencionado en ningún reporte y las grabaciones serán borradas una vez completado el estudio.

Para participar en esta entrevista por favor, responda a este email indicando su información de contacto, ya sea Skype o número telefónico al que se le puede llamar u otro sistema que prefiera de comunicación. Si prefiere un contacto telefónico por favor indique el código de área, hora y día que prefiere ser contactado.

Gracias por su participación

Confidencialidad
Su participación en esta entrevista se mantendrá anónima. Si tiene alguna consulta respecto de este estudio por favor contactar a Paola Perez Guarda, email chola120@tamu.edu

APPENDIX E

Survey English Version

Next paragraphs contain standard information for research protocols. You are invited to take part in a research study being conducted by Paola Perez Guarda, a Doctoral student from Texas A&M University. Contact information has been provided by the Ministry of Education in Chile.

Purpose

The purpose of this study is

1. to identify needs and perceptions of rural teachers with respect to Teacher Professional Development Programs, and
2. to explore how technology can be used to design and deliver materials that can enhance Professional Development Programs for teachers in rural Chilean schools

Participation You are being asked to be in this study because you are an already graduated teacher working at a rural school

This research is voluntary and you have the choice whether or not to be in this research study. You may decide to not begin or to stop participating at any time. If you choose not to be in this study or stop being in the study, there will be no effect on your employment, evaluation, relationship with your school and / or Texas A&M University.

Confidentiality

If you choose to participate in this study, information about you will be kept confidential. No individuals will be identified in any of the reports. You are not required to provide your name.

Research records will be stored securely and password protected, only Paola Perez Guarda will have access to the records.

Benefits and Costs

The direct benefit to you by being in this study is to contribute with information which is useful for your profession and welfare. Aside from your time, there are no costs for taking part in the study.

Survey and Interview

You will be asked to answer an online survey. Your participation in this study will last up to 20 minutes approximately. The survey poses no risk to you and there is no penalty for refusal to participate.

A second part of this study is a follow up interview. This is a phone confidential interview. You may decide to participate in the online survey and not in the interview or participate in both. The question that follows the end of the survey asks about your decision to participate in the interview.

Questions and Contact
For questions about your rights as a research participant; or if you have questions or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu
If you have questions about the study itself contact Paola Perez Guarda by email to chola120@gmail.com
By participating in the interview(s) or completing the survey(s), you are giving permission for the investigator to use your information for research purposes. Please, decide if you want to participate in the study by selecting one of the 2 options below and then select the arrow to the bottom right.
Thank you
I want to participate and complete the survey (1)
I do not want to participate at this time (2)

Section 1 Teacher and School Demographics. The following section contains general questions about you and your school.

Q 1.1 Select your age. Click the down arrow in the box below to view all the options.
21
22
23
24
25
26 ……till 65

Q 1.2 Select your gender. Choose one of the options below.
Male (1)
Female (2)

Q 1.3 What type of schools did you attend for primary education
Rural School(1)
Urban School (2)

Q 1.4 Select the region where your school is located. Click the down arrow in the box below to view all the options.
De Arica y Parinacota (1)
De Tarapaca (2)
De Antofagasta (3)
De Atacama (4)
De Coquimbo (5)
De Valparaíso (6)
Metropolitana de Santiago (7)
Del Libertador General Bernardo O'Higgins (8)
Del Maule (9)

Del Bio Bio (10)
De La Araucanía (11)
De Los Ríos (12)
De Los Lagos (13)
De Aysén del General Carlos Ibáñez del Campo (14)
De Magallanes y de la Antártica Chilena (15)

Q 1.5 Select the number of years you have been teaching in rural schools. Click the down arrow in the box below to view all the options.
Less than a year (1)
1
2
3
4
5
6
7 ….till 35

Q 1.6 What is your current role at the school? Select all appropriate.
Teacher (1)
Principal (2)
Other (3) _____

Q 1.7 How many students are currently enrolled in your school. Move the marker to select the appropriate number.
_____ Number of Students Enrolled (1)

Q 1.8 How many teachers currently teach in your school? Move the marker to select the appropriate number.
_____ Number of Teachers teaching (1)

Q 1.9 Approximate number of Indigenous students in your school (Aymara-Mapuche. etc.)

_____ less than 9 (1) 10-19 (2) 20-29 (3) 30-39 (4) 40-49 (5) 50-59 (6) 60-69 (7) 70-79 (8) 80-89 (9) 90-99 (10) 100-109 (11) 110-119 (12) 120-129 (13) 130-139 (14) 140-149 (15) 150-159 (16)	160-169 (17) 170-179 (18) 180-189 (19) 190-199 (20) 200-209 (21) 210-219 (22) 220-229 (23) 230-249 (24) 250-259 (25) 260-269 (26) 270-279 (27) 280-289 (28) 290-299 (29) More than 300 (30)

Q 1.9.1 How many students do you teach weekly? Move the marker to select the appropriate number.
_____ Number of Students you teach Weekly (1)

Q 1.9.2 How many hours do you spend teaching per week? Move the marker to select the appropriate number.
_____ Hours (1)

Q 1.9.3 How many grades do you teach in your classroom?
1 Grade per classroom (1)
2 Grades per classroom (2)
More than 2 grades per classroom (3)

Q 1.9.4 Select the grade/s you teach.
Kindergarten (1)
1st Grade (2)
2nd Grade (3)
3rd Grade (4)
4th Grade (5)
5th Grade (6)
6th Grade (7)
7th Grade (8)
8th Grade (9)
9^{th} Grade
10^{th} Grade
11^{th} Grade
12^{th} Grade

Q 1.9.5 How many hours do you spend teaching these SUBJECT AREAS per week? Move the marker to select the appropriate number. NOTE: If you do not teach these subjects leave the marker in 0

_____ Language (1)
_____ History (2)
_____ Science (3)
_____ English (4)
_____ Math (5)
_____ Art (6)
_____ Sports (7)
_____ Other. Please describe (8)

Q 1.9.6 Select the type of administration of your school. Choose one option.

Public (1)
Private (2)
Subsidized (3)

SECTION 2 Needs of Teachers' Professional Development in rural areas. The next questions are intended to obtain your input about 3 aspects of Teachers' Professional Development: 1) Importance of Activities 2) Topics that you consider to be important/ necessary for inclusion in training programs and 3) Delivery system that would be adequate based on your needs.

Q 2.1 As a learner who participates in Teachers' Professional Development in any of its forms, how important is it for you to have these opportunities and/ or activities?

_____ To collaborate with other teachers (1)
_____ To learn topics related to my school and grade needs (2)
_____ To learn experientially (3)
_____ To learn practical strategies and ideas that will be immediately applicable (4)
_____ To learn through experiences that involve my perspectives and values (5)
_____ To extend the training through follow up activities that include practice of the content and techniques. (6)
_____ To reflect on my practices with other teachers (7)

Q 2.2 In your opinion, how appropriate these methods would be for implementing Teachers' Professional Development for your rural setting? Move the marker to select your option.

_____ Face-to-face Professional University courses (1)
_____ Professional Conferences (2)
_____ Training Seminars (3)
_____ On-line Professional Courses (4)
_____ Educational Websites (5)

_____ Mentorship from an experienced teacher (6)
_____ Regularly scheduled online collaboration meetings with teachers from other schools (7)

Q 2.3 In your opinion, how necessary is it to include the topics listed below into Teachers' Professional Development to improve your teaching practices? Move the marker to select your option.
_____ Student performance assessment (1)
_____ Classroom management (2)
_____ Needs of students from diverse cultural background (3)
_____ Needs of students with disabilities (4)
_____ Parent and community involvement (5)
_____ Dealing with students and family issues (6)
_____ Teaching English as a Foreign Language (7)
_____ Teaching Indigenous language (s) (e.g. Mapudungun) (8)
_____ Strategies to work with teachers from other schools using Internet (9)

Q 2.4 This space is for you to add anything else you think it is important to share either related to the topic of Teachers' Professional Development or your experience teaching in rural areas.

FINAL PAGE

SECTION 3 Technology has been addressed as a useful tool to design and deliver Teacher Professional Development in general. The next questions are focused on your opinion about the benefits and obstacles of using on-line resources for Teachers' Professional Development in rural schools.

Q 3.1 How helpful would be for your teaching practices to participate in these activities through ON-LINE RESOURCES
_____ Exchange teaching materials online with teachers from other schools (1)
_____ Exchange feedback online about classroom management with teachers from other schools (2)
_____ Work in educational activities online with teachers from other schools (3)
_____ Communicate with other teachers online about general teaching practices and experiences. (4)

Q 3.2 To what extend do you agree these would be benefits of implementing Teachers' Professional Development programs using on-line resources? Move the marker to select your option.
_____ Saves time (1)
_____ Cost effective (2)
_____ Easy to incorporate into my daily schedule (3)
_____ Connecting with other teachers (4)

_____ More variety of learning activities (5)

Q 3.3 To what extent do you think these elements would be obstacles to implementing Teachers' Professional Development using on-line resources: Move the marker to select your option.
_____ Lack of utilities: electrical power, generator broken (1)
_____ Lack of computers (2)
_____ Lack of Internet service (3)
_____ Absence of technology experience (4)

Q 3.4 This space is for you to add anything else you think it is important to share related to use of online technologies in Teachers' Professional Development in rural areas.

INTERVIEW QUESTION. Thanks for taking this survey. A second phase of the study is to conduct selected follow-up telephone interviews. If you would be willing to participate in an interview please indicate below and enter your email address. Thanks!
Yes, I would be willing to participate in an interview. (Enter email below.) (1)
_____
I do not want to participate in the interview (2)

APPENDIX F

Survey Spanish versión

Los siguientes párrafos contienen información standard asociada a protocolos de investigación. Usted ha sido invitado a participar en este estudio conducido por Paola Pérez Guarda, alumna de doctorado en la Universidad de Texas A&M, Estados Unidos. Los datos de contacto han sido entregados por el Ministerio de Educación de Chile

Propósito El propósito de este estudio es

1. Definir las necesidades de profesores rurales en relación a Programas de Desarrollo Profesional Docente, y
2. Explorar como la tecnología puede ser usada para diseñar e implementar materiales que pueden mejorar los Programas de Desarrollo Profesional Docente en escuelas rurales chilenas.

Participación

Usted ha sido invitado a participar en este estudio dado que es un docente graduado y trabaja en una escuela rural.

La participación en esta investigación es voluntaria, usted puede elegir el participar o no en este estudio. Usted puede decidir no participar o dejar de participar en cualquier momento. Sí elige no participar en este estudio o dejar de hacerlo, no habrá consecuencia alguna que afecte su empleo, evaluación, relación con su escuela o la Universidad Texas A&M.

Confidencialidad Si elige participar en este estudio, la información será confidencial y su participación será anónima. Ningún individuo será identificado en los reportes. No se requiere que dé se nombre.

La información de la investigación será guardada de manera segura y protegida por una clave, solo Paola Pérez Guarda tendrá acceso a esta información.

Beneficios y Costos Los beneficios directos para usted se refieren a contribuir con información que es útil para su profesión y bienestar. Además de su tiempo, no hay costos por participar en este estudio.

Encuesta y Entrevista

Se le solicita responder una encuesta a través de Internet (en línea). Su participación en esta encuesta es de aproximadamente 20 minutos. La encuesta no implica riesgo alguno para usted y no existe ninguna penalidad si reúsa participar. La segunda parte de este estudio es una entrevista telefónica de carácter confidencial. Usted puede decidir participar de la encuesta en línea y no de la entrevista o participar en ambos. La pregunta que sigue al final de la encuesta en línea se refiere a su decisión de participar en la entrevista.

Preguntas y Contacto

Si tiene alguna pregunta en relación a sus derechos como participante en esta investigación, usted puede llamar a la Oficina de Protección de Sujetos Humanos en la Universidad Texas A&M, fono (979) 458-4067 o contactarlos por email irb@tamu.edu

Si tiene preguntas sobre la investigación en sí, favor contactar a Paola Pérez Guarda a través del email chola120@tamu.edu

A través de su participación en esta encuesta y subsiguiente entrevista usted está autorizando a Paola Pérez Guarda para usar la información obtenida para propósitos investigativos. Por favor, decida si desea participar en el estudio seleccionando una de las dos siguientes opciones y luego la flecha a la derecha. Gracias!

- ❍ Si deseo participar y completar la encuesta (1)
- ❍ No deseo participar en este momento (2)

SECCIÓN 1

ASPECTOS DEMOGRÁFICOS DE LA ESCUELA Y EL DOCENTE

La siguiente sección contiene preguntas generales sobre usted y su escuela.

P 1.1 Su edad. Seleccione el recuadro para ver las opciones de edades

21 (1)
22 (2)
23 (3)
24 (4)
25 (5)
26 (6)
27 (7)
28 (8)
…till 65
More than 65 (9)

P 1.2 Género

Masculino (1)
Femenino (2)

P 1.3 Seleccione el tipo de escuela donde estudio educación básica

Escuela Rural (1)
Escuela Urbana(2)

P 1.4 Región en la que se ubica su escuela. Seleccione el recuadro para ver las opciones

Región de Arica y Parinacota (1)
Región de Tarapacá (2)
Región de Antofagasta (3)
Región de Atacama (4)
Región de Coquimbo (5)
Región de Valparaíso (6)
Región del Libertador General Bernardo O'Higgins (7)
Región del Maule (8)
Región del Bío Bío (9)

Región de la Araucanía (10)
Región de Los Ríos (11)
Región de Los Lagos (12)
Región Aisén del General Carlos Ibáñez del Campo (13)
Región de Magallanes y de la Antártica Chilena (14)
Región Metropolitana de Santiago (15)

P 1.5 Número de años enseñando en escuela rural. Seleccione el recuadro para ver las opciones
Menos de 1 año (1)
1
2
3
4
5….hasta 35
Más de 35 años (8)

P 1.6 ¿Cuál es su actual rol en la escuela? Seleccione todas las alternativas apropiadas.
Profesor (1)
Director (2)
Otro. ¿Cuál? (3) _____

P 1.7 Actualmente, ¿Cuántos alumnos hay matriculados en su escuela? Mueva el marcador para seleccionar el número apropriado.
_____ Número de Alumnos en Escuela (1)

P 1.8 Número aproximado de Alumnos de Pueblos Originarios (Aymaras, Mapuches , etc)
_____

Menos de 9 (1)	160-169 (17)
10-19 (2)	170-179 (18)
20-29 (3)	180-189 (19)
30-39 (4)	190-199 (20)
40-49 (5)	200-209 (21)
50-59 (6)	210-119 (22)
60-69 (7)	220-229 (23)
70-79 (8)	230-240 (24)
80-89 (9)	241-250 (25)
90-99 (10)	251-260 (26)
100-109 (11)	261-269 (27)
110-119 (12)	270-279 (28)
120-129 (13)	280-289 (29)
130-139 (14)	290-299 (30)
140-149 (15)	More than 300 (31)

150-159 (16)	

P 1.9 Actualmente, ¿Cuántos docentes enseñan en su escuela? Mueva el marcador para seleccionar el número apropiado.
_____ Número de docentes (1)

P 1.9.1Actualmente ¿A cuántos alumnos enseña semanalmente? Mueva el marcador para seleccionar el número apropriado.
_____ Número de Alumnos que enseña por semana (1)

P 1.9.2 Semanalmente, ¿Cuántas horas horas pedagógicas (45 minutos) enseña en la escuela? Mueva el marcador para seleccionar el número apropiado.
_____ Horas pedagógicas (1)

P 1.9.3 ¿A cuántos cursos enseña en su sala de clases?
1 curso por sala (1)
2 cursos por sala (2)
Más de 2 cursos por sala (3)

P 1.9.4 Seleccione los cursos que enseña.(EDM = Enseñanza Media)
Jardin (1)
1er año (2)
2do año (3)
3er año (4)
4to año (5)
5to año (6)
6to año (7)
7mo año (8)
8vo año (9)
1er EDM
2do EDM
3er EDM
4to EDM

P 1.9.5 Semanalmente, ¿Cuántas horas pedagógicas enseña estas materias? Use el marcador para indicar el número de horas. NOTA: Si no enseña alguna de estas materias deje el marcador en cero (0)
_____ Lenguaje y Comunicación (1)
_____ Historia (2)
_____ Ciencia (3)
_____ Inglés (4)
_____ Matemáticas (5)
_____ Artes (6)
_____ Educación Física (7)
_____ Otro. Cuál? (8)

P 1.9. 6 Seleccione el tipo de administración de su escuela.

- ❍ Pública (1)
- ❍ Privada (2)
- ❍ Subsidiada (3)

P1.9.7 En relación a la conexión a Internet. ¿Cómo calificaría la estabilidad de este servicio?

a) Estable
b) Inestable
c) No existe servicio de Internet

SECCIÓN 2

NECESIDADES RELACIONADAS CON LOS PROGRAMAS DE DESARROLLO PROFESIONAL DOCENTE EN AREAS RURALES.

Las siguientes preguntas están orientadas a obtener su opinión sobre 3 aspectos relacionados con los Programas de Desarrollo Profesional Docente:1) Importancia de Actividades 2) Tópicos que usted considera necesario incluir, y 3) Sistema de implementación que considera más adecuado según sus necesidades.

P 2.1 Como participante en los Programas de Desarrollo Profesional, ¿Qué tan importante es para usted que estos ofrezcan las actividades y oportunidades mencionadas a continuación?

_____ Colaborar con otros profesores (1)
_____ Aprender tópicos relacionados con las necesidades de su escuela y curso (2)
_____ Aprender a través de la experimentación de las actividades (3)
_____ Aprender estrategias prácticas que sean aplicables inmediatamente (5)
_____ Aprender a través de experiencias que involucren sus perspectivas y valores (6)
_____ Extender la capacitación con actividades de seguimiento que incluyan práctica de contenido y técnicas (7)
_____ Reflexionar sobre sus práctica con otros docentes (8)

P 2.2 En su opinión y considerando su contexto rural, ¿Qué tan adecuados serían estos métodos de implementación de Programas de Desarrollo Profesional Docente? Mueva el marcador para seleccionar su opinión.

_____ Cursos dictados por universidades modalidad presencial (1)
_____ Conferencias profesionales y seminarios de capacitación (2)
_____ Seminarios de Capacitación (8)
_____ Cursos profesionales modalidad en línea (4)
_____ Páginas Web Educativas (5)
_____ Tutorías (6)
_____ Colaboración regular con profesores de otras escuelas a través de Internet. (11)

P 2.3 En su opinión, ¿Qué tan necesario es incluir los tópicos que se mencionan a continuación en los Programas de Desarrollo Profesional Docente? Mueva el marcador para seleccionar su opinión.

_____ Evaluación del desempeño del alumno (1)
_____ Manejo de la sala de clases (2)
_____ Abordar las necesidades de los alumnos de diversos orígenes culturales (3)
_____ Abordar las necesidades de alumnos con discapacidades (4)
_____ Promover la participación de padres y comunidad (5)
_____ Manejo de conflictos familiares y del estudiante (6)
_____ Otorgar clases de inglés como idioma extranjero (7)
_____ Enseñanza de idiomas nativos e.j Mapudungun (8)
_____ Estrategias para trabajar con profesores de otras escuelas usando Internet (9)

P 2.4 Este espacio es para que usted añada lo que considere es importante compartir relacionado con el tópico de Desarrollo Profesional Docente o su experiencia enseñado en escuelas rurales

ÚLTIMA PÁGINA SECCIÓN 3

SOBRE EL POTENCIAL USO DE INTERNET PARA EL DESARROLLO E IMPLEMENTACION DE PROGRAMAS DE DESARROLLO PROFESIONAL DOCENTE EN ESCUELAS RURALES.

La tecnología online (a través de Internet) ha sido considerada como una herramienta útil para implementar y entregar Desarrollo Profesional Docente en general. Las siguientes preguntas intentan identificar los beneficios y obstáculos que usted percibe en el uso de recursos en línea (a través de Internet) para diseñar e implementar Desarrollo Profesional Docente en escuelas rurales.

P 3.1 ¿Qué tan útil sería para sus prácticas pedagógicas participar de las siguientes actividades usando Internet? Seleccione el botón correspondiente

_____ Compartir materiales con profesores de otras escuelas a través de Internet (1)
_____ Intercambiar comentarios sobre manejo de la sala de clases con profesores de otras escuelas a través de Internet (2)
_____ Trabajar en actividades educacionales con otros profesores a través de Internet (3)

_____ Hablar con profesores sobre prácticas y experiencias pedagógicas generales (4)
P 3.2 ¿Qué tan de acuerdo esta con que los siguientes ítems serían beneficios de implementar Programas de Desarrollo Profesional Docente a través de Internet? Mueva el marcador para seleccionar su opinión
_____ Ahorraría tiempo (1)
_____ Rentable (2)
_____ Fácil de incorporar en su horario diario (3)
_____ Permitiría conectarse con otros profesores (4)
_____ Más variedad de actividades de aprendizaje (5)
P 3.3 ¿En qué medida piensa usted que estos elementos serían obstáculos a la implementación de Programas de Desarrollo Profesional Docente a través de Internet? Mueva el marcador para seleccionar su opinión
_____ Falta de servicios: electricidad, generador descompuesto (1)
_____ Falta de computadores (2)
_____ Falta de servicio de Internet (3)
_____ Inexperiencia tecnológica (4)
Q 3.4 Si desea añadir o compartir otros aspectos relativos al uso de tecnología y/o Internet en el Desarrollo Profesional Docente utilice el siguiente recuadro

ENTREVISTA Gracias por responder esta encuesta. La segunda parte de este estudio implica conducir una entrevista telefónica de seguimiento. Si usted desea participar en esta entrevista anónima, por favor seleccione la opción en las siguientes alternativas e ingrese su email para ser contactado. GRACIAS

Sí, me gustaría participar en la entrevista telefónica anónima. (ingrese email en casillero) (1) _____

No deseo participar en la entrevista (2)

APPENDIX G

Script interview questions-English version

Interviewer: Good Morning/ Afternoon/ Evening
My name is Paola Perez Guarda and I am conducting a study about teachers' professional development in rural schools in Chile.
Thanks for participating in this anonymous interview, which consists of 9 questions about your perceptions and needs when participating in teachers' professional development. There is no right or wrong answers since this interview intent to get your personal opinion about the topic.
Do you have any question or concern? For the effects of analysis it is necessary to record your answers to the questions. Do you have any inconvenient with this recording?
There is no limit of time to this interview and you can choose to answer or not the questions as your convenience.
Thanks again for participating, let's start with the questions, ready?

1) What is it like to be a rural teacher?
2) How necessary are teachers' professional development programs for your teaching practices?
3) How beneficial for your teaching practices have teachers' professional development programs been?
4) What benefits do you expect to get by participating in teachers' professional development programs?
5) Remember any teacher professional development you attended when you had a good learning experience, could you describe to me the activities and elements it had? This question evolved after the first interview to "remember a positive learning experience and a not positive experience."
6) How could technology be of help in teachers' professional development programs for rural teachers?
7) If you had the chance to suggest something to people who design teachers' professional development for rural teachers what that would be? This question also evolved to add an option about the participant being the designer of teachers' professional development programs for rural teachers.

This is the end of the interview, is there anything else you would like to add in relation to the topic or your experience as rural teacher?

Thanks again for participating in the interview, as said before, you will not be identified in any report of this study. Have a good day.

APPENDIX H

Script interview questions-Spanish version

Entrevistador: Buenos Días/ Tardes.
-Mi nombre es Paola Pérez Guarda y estoy conduciendo un estudio sobre el desarrollo profesional docente en las escuelas rurales de Chile.
-Gracias por participar en esta entrevista anónima, esta consiste en 9 preguntas sobre sus expectativas al participar en los programas de desarrollo profesional docente. No hay respuestas correctas o incorrectas ya que esta entrevista intenta obtener su opinión personal
- Para efectos de análisis es necesario grabar sus respuestas a las preguntas.
-¿Tiene algún inconveniente con esta grabación?
No existe un límite de tiempo para responder estas preguntas, usted puede elegir responderlas todas u omitir alguna si lo estima conveniente.
-¿Tiene alguna pregunta?
Gracias por participar, comencemos con las preguntas, lista/o?

1. ¿Cómo es ser profesor rural?
2. ¿Qué tan necesarios son los programas de desarrollo profesional docente para sus prácticas pedagógicas?
3. ¿Qué tan beneficios para sus prácticas pedagógicas han sido los programas de Desarrollo Profesional en los que ha participado?
4. ¿Qué beneficios espera obtener al participar en programas de Desarrollo Profesional Docente?
5. ¿Recuerde algún programa de desarrollo profesional docente en el que usted tuvo una experiencia de aprendizaje exitosa, podría describir esa experiencia y las actividades de ella?
6. ¿Cómo puede la tecnología ayudar en los programas de Desarrollo Profesional Docente para profesores rurales?
7. Finalmente, si usted tuviera la oportunidad de sugerir algo a los encargados de diseñar los programas de Desarrollo Profesional Docente para profesores rurales, que sería?

Este es el final de la entrevista, hay algo más que quisiera agregar en relación al tópico o su experiencia como profesor rural?

Gracias nuevamente por participar en esta entrevista, como se ha establecido, usted no será identificado en ningún reporte de este estudio. Que le vaya bien.

APPENDIX I

TotalSubj

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	27	7.9	7.9	7.9
	1	51	14.9	14.9	22.7
	2	18	5.2	5.2	28.0
	3	22	6.4	6.4	34.4
	4	20	5.8	5.8	40.2
	5	15	4.4	4.4	44.6
	6	25	7.3	7.3	51.9
	7	59	17.2	17.2	69.1
	8	106	30.9	30.9	100.0
	Total	343	100.0	100.0	

APPENDIX J

Indigenous Student Enrolled					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	105	30.6	31.3	31.3
	1- 9	127	37.0	37.9	69.3
	10-19	27	7.9	8.1	77.3
	20-29	20	5.8	6.0	83.3
	30-39	9	2.6	2.7	86.0
	40-49	10	2.9	3.0	89.0
	50-59	7	2.0	2.1	91.0
	60-69	6	1.7	1.8	92.8
	70-79	2	.6	.6	93.4
	80-89	7	2.0	2.1	95.5
	90-99	5	1.5	1.5	97.0
	100-109	2	.6	.6	97.6
	120-129	3	.9	.9	98.5
	130-139	1	.3	.3	98.8
	170-179	1	.3	.3	99.1
	220-229	2	.6	.6	99.7
	Over 300	1	.3	.3	100.0
Total		343	100.0		

APPENDIX K

Delivery Methods

Note: not appropriate= 1-25, *somehow appropriate*= 26-50, *appropriate* = 51-75, *very appropriate*= 76-100. [a] Regularly scheduled online collaboration meetings with teachers from other schools

Delivery Methods	Mean	S.D.
Live professional university courses	77.26	27.11
Conferences	57.76	26.03
Online courses	62.80	26.45
Educational websites	72.10	24.27
Mentorship from an experienced teacher	68.58	24.38
Training seminars	69.75	25.06
Online meetings[a]	69.98	25.23

Type of Delivery method	Regional Groups					
	Far N/S (n = 18)		Center (n = 120)		South (n = 194)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Live professional university courses	84.33	23.25	77.53	28.60	76.44	26.52
Professional conferences	60.00	26.14	58.97	26.39	56.81	25.89
Online professional courses	65.59	28.62	64.22	24.83	61.68	27.28
Educational websites	66.68	27.76	71.16	26.26	73.11	22.71
Mentorship from an experienced teacher	67.50	28.28	71.67	25.40	66.72	23.24
Training seminars	73.78	29.37	71.35	25.28	68.40	24.54
Online meetings	64.76	26.68	71.90	26.08	69.25	24.58

APPENDIX L

Topics

Note₂: not necessary= 1-25, *somehow necessary*= 26-50, *necessary* = 51-75, *very necessary*= 76-100

Topics	Mean	S.D.
Stud performance assessment*	85.40	17.38
Classroom mgmt*	85.35	17.28
Needs student from different cultural background	81.78	20.30
Needs of students with disabilities	86.86	17.07
Parent and community involvement	86.07	16.07
Dealing with student and family issues	82.75	19.15
Teaching english as a foreign language	80.02	19.97
Teaching indigenous language	66.98	26.44
Strategies to work with teachers from other schools	74.49	23.61

	Regional Groups					
	Far N/S (n = 18)		Center (n = 120)		South (n = 200)	
Topics	Mean	S.D.	Mean	S.D.	Mean	S.D.
Student assessment performance	91.94	11.04	85.88	17.53	84.52	17.68
Classroom mgmt.*	82.17	21.64	86.34	15.81	85.03	17.76
Needs student from different cultural background	85.11	17.88	81.30	20.56	81.78	20.41
Needs of students with disabilities	92.39	10.82	87.45	15.78	86.01	18.20
Parent and community involvement	86.78	17.20	87.41	14.33	85.19	16.96
Dealing with student and family issues	84.11	22.07	85.52	15.94	80.90	20.52
Teaching english as a foreign Language	84.65	15.96	82.06	18.50	78.35	21.03
Teaching indigenous language	74.78	24.00	61.52	27.32	69.65	25.62
Strategies to work with teachers form other schools using Internet	72.50	23.34	75.36	24.38	74.14	23.27

APPENDIX M

Activities and Opportunities

Note: not important= 1-25, *somehow important*= 26-50, *important* = 51-75, *very important*= 76-100

Opportunities and Activities	Mean	S.D.
Collaborate w/ other teachers	82.02	19.01
Learn topics related to my school and grade needs	85.50	17.27
Learn experientially	86.42	17.27
Learn strategies and ideas that will be applied immediately	89.49	14.85
Learn through experiences that involve teachers perspectives and values	87.23	15.71
Extend the training	86.33	17.13
Reflect on practices with other teachers	88.19	16.95

Opportunities and Activities	Regional Groups					
	Far N/S (n = 18)		Center (n = 121)		South (n = 198)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Collaborate w/ other teachers	80.00	22.72	83.69	18.47	81.17	19.02
Learn topics related to my school and grade needs	84.61	19.54	86.26	17.98	85.11	16.67
Learn experientially	94.11	8.73	87.15	18.09	85.26	17.19
Learn strategies and ideas that will be applied immediately	95.00	8.00	90.03	15.02	88.64	15.15
Learn through experiences that involve teachers perspectives and values	91.11	15.78	88.42	15.47	86.15	15.82
Extend the training	85.94	19.64	87.14	16.78	85.88	17.17
Reflect on practices with other teachers	85.61	24.81	89.48	16.69	87.63	16.29

APPENDIX N

Benefits and Obstacles

Note: not helpful= 1-25, somehow helpful= 26-50, helpful = 51-75, very helpful= 76-100

Activities	Mean	S.D.
Exchange teaching materials	83.68	19.81
Exchange feedback about classroom management	78.66	22.67
Work in educational activities online w/ other teachers	79.00	21.92
Communicate about general teaching practices and experiences	78.98	23.01

Online activities	Regional Groups					
	N/S (n = 18)		Center (n = 119)		South (n = 196)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Exchange materials	83.28	21.67	86.22	16.78	82.20	21.22
Exchange feedback	76.72	26.07	79.37	21.83	78.41	22.95
Work in educational activities	76.72	24.29	81.32	19.75	77.81	22.91
Communicate with other teachers about general practices	78.56	25.25	81.15	21.69	77.72	23.58

Note: strongly disagree= 1-25, *disagree*= 26-50, *agree* = 51-75, *strongly agree*= 76-100.

Benefits	Mean	S.D.
Saves time	75.65	22.44
Cost effective	66.00	26.13
Easy to incorporate into my daily schedule	68.01	27.10
Connecting with other teachers	77.24	22.32
More variety of learning activities	80.53	21.03

Benefits	Regional Groups					
	Far N/S (n = 18)		Center (n = 119)		South (n = 196)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Saves time	76.33	23.56	75.92	22.14	75.43	22.64
Cost effective	69.17	26.15	64.54	25.88	66.73	26.38
Easy to incorporate in schedule	65.50	28.80	67.77	26.17	68.39	27.63
Connecting with other teachers	74.11	22.94	77.76	20.16	77.21	23.58
More variety of learning activities	71.28	28.88	80.42	17.83	81.44	21.87

Note: no obstacle= 1-25, *somehow obstacle*= 26-50, *obstacle* = 51-75, *big obstacle= 76-100*

Obstacles	Mean	S.D.
Lack of utilities: electrical power, generator broken	48.64	37.35
Lack of computers	54.63	35.32
Lack of Internet service	76.10	31.75
Absence of technology experience	48.14	34.02

Obstacles	Regional Groups					
	N/S (*n* = 17)		Center (*n* = 116)		South (*n* = 195)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
lack of utilities: electrical power, generator broken	67.29	33.57	44.02	38.00	49.73	36.82
Lack PC	58.06	35.01	50.54	35.73	56.80	35.06
Lack of Internet	91.18	13.18	68.89	34.44	78.48	30.57
Absence technology experience	58.41	36.05	50.43	33.90	45.77	33.81