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A NATIONAL MIXED-METHODS STUDY OF SCHOOL NETWORKS IN CHILE

Mixed-methods research is a contemporary trend in the social sciences, and many controversies exist within this field regarding its nature as an integrative research paradigm (Creswell, 2011; Greene, 2007; Teddlie & Tashakkori, 2010). According to Creswell (2011), a strong fundamental is the questionable use of qualitative and quantitative descriptors to define what mixed-methods is. It is understandable that this division between qualitative and quantitative paradigms exists within mixed methods. To a great extent, this is a result of the debates that took place during the 1970s and 1980s when researchers in both camps strove to make their respective methods the standard for studying social phenomena (Greene, 2007). However, while this dichotomy may make sense on an abstract or theoretical level, it does not seem as relevant in practice, as researchers tend to use both methodologies in the same study to understand a social phenomenon (Creswell, 2011).

Even when we look at a method in an isolated manner, as it is the case in content analysis, the qualitative versus

quantitative distinction can become hazy. Some types of content analyses observe the repetition of certain terms, focusing attention on comparative frequencies and patterns of meanings. In this process, one must first perform interpretive hermeneutic work (qualitative) to codify words and meanings and then count these codified repetitions (quantitative). Finally, this analysis may take a qualitative direction, as in demonstrating the importance of a word or its meanings in a certain context. However, one could also create a histogram based on the frequency of each repeated word to find which terms are most prevalent, processes which can be understood as quantitative. Arguably, both analytical strategies are a combination of qualitative and quantitative (Creswell, 2011).

To resolve the tension mentioned above, some mixed-methods authors have spoken of a continuum between qualitative and quantitative (Creswell, 2008, 2011). Although this continuum addresses this tension, it seems that instead of solving the problem, it further reinforces the idea that mixed methods should use these two descriptors (qualitative and quantitative) to define itself.

Another issue with using the qualitative and quantitative methodologies to define mixed methods is that it creates an oversimplification that obscures the variety of ways to study social phenomena. In the case of qualitative methodologies, one can identify many different ways to conduct a qualitative study. For example, Schwandt (2000) presents three different epistemological perspectives – interpretivism, hermeneutics and social constructionism – within qualitative inquiry. Also, quantitative methodologies, that might seem more similar and appropriate for one unique paradigmatic tent, can also respond to different approaches to social phenomena. For example, descriptive statistics and social network analysis might all use quantitative data, but they are very different to be just reduced to the same quantitative category.

One way to avoid the terms "qualitative" and "quantitative" as primary descriptors in mixed methods is to focus on the purposes for mixing methods, rather than fixating the discussion on the methods mixed. In this area, Jennifer Greene has been recognized by her peers as a key researcher (Creswell, 2011; Johnson & Gray, 2010; Teddlie & Tashakkori, 2011), AQ1 and her work has contributed significantly to rethinking mixed methods without limiting the field to an opposition (or a continuum) between qualitative and quantitative.

Greene (2007) describes mixed-methods research as a way of thinking with the overall purpose of better understanding a social phenomenon. Greene characterized this way of thinking about mixed methods as inviting "multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple stand positions on what is important and to be valued and cherished" (p. 20). Among the variety of perspectives contained within mixed methods, one can pinpoint several paradigmatic positions that have an impact on methodological designs. This book is positioned in the substantive theory paradigmatic stance, the theoretical concepts that guide methodological decisions are most relevant for this stance. The phases of collaborative inquiry constitute the framework to mix the findings of two independent research studies about the SIN policy, where three of the authors participated. Following this logic, mixing depends more on the substantive theory, and the most logical thing to do is to strive for coherence between the guiding theory, research design and methods (Greene, 2007).

In this book, our purpose is to better understand the collaborative practices and knowledge that are mobilized in SINs, especially to identify if the SIN strategy is promoting a culture of collaboration in the competitive environment of the Chilean educational system. To achieve this goal, we employ the theoretical framework of collaborative inquiry to identify specific practices evidenced by these school networks.

MIXED-METHODS DESIGN

Following Greene's (2007) perspective, this mixed-methods study's main purpose is to better understand to what extent SINs have created the conditions for the development and sustainability of meaningful collaborative practices among network participants, and the production and sharing of relevant knowledge within networks. Three research questions have been defined to structure the design of this mixed-methods research: (1) What kind of knowledge is mobilized between the SINs and the schools that compose them? (2) What types of meaningful collaborative practices among school leaders can be promoted by the SINs in the Chilean market-oriented educational system? (3) What are the challenges and possibilities for the development of sustainable school networks in a market-oriented educational context? Each of these questions addresses different topics that are key for Professional Learning Network (PLN), the first focused on *knowledge mobilization*, the second on *collaborative practices* and the third on the *sustainability of networks*.

Despite the three research questions have a clear focus, they are still too broad. To access precise, concrete and relevant information from both studies, these three general questions have been broken into more specific key questions. Using the collaborative inquiry cycle as a substance theory to mix our methods (studies), the key questions are located into each phase of the inquiry cycle. The design of the mixed-methods research is described in Fig. 6, where the general topic, the key questions and the phase of the collaborative inquiry are presented.

This mixed-methods study is composed by two independent studies, primary and supplementary (Greene, 2007). The primary study is a multi-site case study, consisting of interviews, focus groups and observations with participants of 15 networks to understand how the SIN policy was designed and implemented

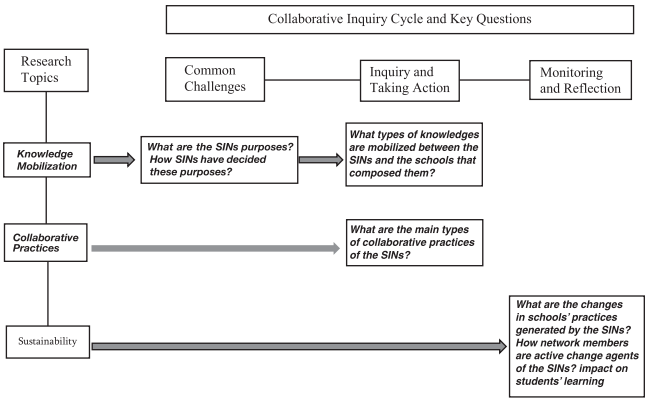

Fig. 6. Mixed-Methods Design.

in 2016. Findings from this study are presented in chapter 4 as the primary source of data for the mixed-methods analysis of the SIN strategy. The supplementary study is questionnaire applied nationally in 2017 to collect information about the functioning of SINs from the perspective of principals and curriculum coordinators. A summary table of findings from the questionnaire is briefly introduced in this chapter to present an overview of the three-factor structure of the instrument, which is employed to characterize network functioning. Later, in Chapter 4, we use specific data from questionnaire items to support and complement the data presented by the primary study. Next sections describe the rationale, design, participants and instruments of the multi-site case study and the national questionnaire.

A MULTI-SITE CASE STUDY OF SIN

In 2016, MINEDUC sponsored a multi-site case study to analyze the key elements of the design and examine the early implementation of the SIN strategy in the country, with financial

and technical support from the Santiago office of the United Nations Educational, Scientific and Cultural Organization (UNESCO). The study was conducted by a team of researchers led by the Pontifícia Universidad Católica de Valparaíso, in collaboration with researchers from the Center for Advanced Research in Education of the Universidad de Chile and from the Universidad de Magallanes.

The research team designed and conducted a multi-site qualitative case study (Stake, 2005) of 15 networks in five regions of the country (Coquimbo, Valparaíso, Metropolitana, Biobío and Magallanes) focused in different Provincial Educational Departments. These departments are centrally coordinated by the General Education Division of MINEDUC. These provincial educational departments consist of a variable number of supervisors, who are the ministry's representatives in each network of the territory. The number of supervisors working in a given provincial educational department depends on the population in the territory where these are located.

The specific objectives of the multi-site case study were (1) identify the purposes, action plan and rationale of the SINs; (2) identify and characterize conditions and areas of enactment of the educational practice of the SINs; (3) contrast MINEDUC's design of SIN strategy with its implementation in the chosen territories; and (4) describe strengths, opportunities for improvement and learnings that arise from the implementation of the SINs, identifying (a) SINs' contribution to the enactment of collaborative practices between leadership teams that participate in the SINs and (b) SINs' contribution to improving school management practices.

The fieldwork was conducted between July and November 2016. The study involved two stages of data collection and analysis. The first included an individual interview with staff from the Provincial Educational Department, specifically the chief of each department and technical-pedagogical

chiefs from the networks; an individual interview with local administrators (municipality or private-subsidized administrator) and an individual interview with ministry supervisors who participate in each of the networks of this study; and the analysis of official technical documents of the MINEDUC related to the SIN strategy.

The second stage included an individual interview with a principal and a curriculum coordinator who actively participated in their SIN, and a focus group was conducted with principals and curriculum coordinators who participated in the studied SINs. These individual interviews and focus groups were held with 10 out of the 15 studied networks, lasting 70 minutes on average. Finally, two observations of the work sessions of each of the 15 SINs were performed, lasting approximately 90 minutes each.

Diversity in terms of the number of participant schools, their administration (municipal or private-subsidized schools), their location (rural or urban) and type of schools (elementary, academic high schools, vocational high schools) were the main criteria to select the cases. The majority of the selected networks (11) consisted of schools administered by a municipal department of education. Nine networks convened schools belonging to one municipality, one network consisted of schools from two municipalities, two involved five different municipalities, two networks were composed of schools from six municipalities and the largest network involved schools of seven different municipalities. The smallest network was composed of 6 schools, and the largest of 16, on average, school networks were composed of 10 educational institutions. All networks included elementary and high schools, seven of them included also vocational education and one network was only composed of special education schools, which are educational institutions that only serve students with special education needs. In Table 1, there is a full description of the characteristic of each studied network:

Table 1. Characteristic of the Studied SINs.

Network Number	Municipality	Administration	Urbanization	Grades of the Schools	Number of Institutions
SIN 1	5	Municipal and privately subsidized	Urban and rural	• Kindergarten • Elementary • High school • Vocational training	11
SIN 2	5	Municipal	Urban	• Kindergarten • Elementary • High school • Vocational training	15
SIN 3	1	Municipal	Urban and rural	• Kindergarten • Elementary • High school • Vocational training	2 (4 rural)
SIN 4	1	Municipal	Rural	• Kindergarten • Elementary • High school	6
SIN 5	1	Municipal	Urban	• Kindergarten • Elementary • High school • Vocational training • Special education	7

SIN 6	1	Municipal	Urban	• Elementary • High school • Vocational training • Adult education	9
SIN 7	6	Privately subsidized	Urban	• Kindergarten • Elementary • High school • Special education (language)	15
SIN 8	2	Privately subsidized	Urban	• Kindergarten • Elementary • High school • Special education (language)	11
SIN 9	1	Municipal	Urban	• Kindergarten • Elementary • High school • Vocational training • Special education • Adult education	8
SIN 10	1	Privately subsidized	Urban	• Kindergarten • Elementary • High school • Vocational training	13

(Continued)

Table 1. (*Continued*)

Network Number	Municipality	Administration	Urbanization	Grades of the Schools	Number of Institutions
SIN 11	1	Municipal	Urban	• Elementary • High school	9
SIN 12	1	Municipal	Rural and urban	• Elementary • High school	6
SIN 13	1	Municipal	Urban	• Elementary • High school	16
SIN 14	1	Municipal	Urban	• Elementary • High school	13
SIN 15	7	Municipal	Urban	• Special education	10

The observations and protocols for individual interviews and focus groups were based on a theoretical framework consisting of several areas and dimensions relevant for networking (Ahumada, González, & Pino-Yancovic, 2016): (1) orientation to improvement (purpose, processes and sustainability), (2) organization of the network (actors, nodes, type of relationships, distributed leadership, structure and support), (3) social capital (reciprocity, centrality, trust and collective responsibility) and (4) network trajectory and socio-historical and cultural context. Data were analyzed for each network case, and then a cross-case analysis using qualitative content analysis was performed (Cáceres, 2003) with the software Atlas ti. The cross-case analysis was guided by a list of codes based on the theoretical framework and emergent codes that seemed especially significant from the information provided by informants.

During this multi-site case study, the research team developed two reports of the findings that were turned to the study counterpart at MINEDUC. This study provides rich descriptions of the operation of SIN that could be deepened when looked at with other evidence about these networks. Nevertheless, being an exploratory case study limits the possibilities for generalization from its findings.

SIN NATIONAL QUESTIONNAIRE

The second study has been developed since 2016 by our team at the Leadership Center for Educational Improvement, LIDERES EDUCATIVOS, at the Pontifícia Universidad Católica de Valparaíso. Each year since, we have been monitoring nationwide the perception of principals and curriculum coordinators about their SINs, employing an adaptation of the Educational Collaborative Network Questionnaire

developed by Díaz-Gibson, Civís-Zaragoza, and Guàrdia-Olmos (2014).

The adapted version of the questionnaire measures network functioning based on three theoretical dimensions: professional capital, networked improvement and networking. Professional capital considered the three interrelated areas described previously in this book (human capital, social capital and decisional capital). Networked improvement is assessed based on how participants perceive the effects of the networks in the improvement of their schools, with special emphasis on individual and collective outcomes of networks (Leithwood, 2018). Networking is focused on the perceived functioning of the network, with emphasis on the purposes, agenda and projects being carried out within networks. These dimensions are assessed with 32 Likert-type scale items asking school leaders about their level of agreement with a given statement about their SIN. The questionnaire also has five open-ended questions inviting principals and curriculum coordinators to express their views on (1) aspects that facilitate networking, (2) aspects that hinder networking, (3) support received from their network, (4) contributions to their network and (5) advice to improve networking.

For the mixed-methods research reported in this book, we have considered data from 2017, collected between July and October through an online platform. An email with a cover letter and a link to the questionnaire was sent to principals and curriculum coordinators of the 483 networks actively operating that year in the country. During the application process, these participants were contacted by telephone to confirm they received the email with the link to the questionnaire and encourage them to answer it. Finally, a total of 1,789 school leaders, who participated in 398 networks, answered the questionnaire.

DESCRIPTIVE ANALYSIS OF THE NATIONAL QUESTIONNAIRE

In the 2017 application, the majority of participants identified as female (63%), half of them were principals (54%), and a significant proportion was curriculum coordinators (40%). Only a small group indicated occupying another role in their schools (6%). Due to the adaptation made of the original instrument (Díaz-Gibson et al., 2014), an exploratory factor analysis was conducted to test the validity of the dimensions theoretically measured: networking, professional capital and networked improvement. The Kaiser–Meyer–Olkin (KMO) test confirms the adequacy of the survey data for such analysis (KMO = 0.986).

Assuming, as the theory suggest, that the three factors (dimensions) are correlated, Table 2 shows the loadings by factors and items using promax rotation. The correlation matrix of the promax-rotated common factors confirms correlations between factors of 0.671 and 0.688. Using a minimum loading threshold of 0.40, results indicate an adequate simple structure of the questionnaire measuring the three dimensions. Additionally, the uniqueness indicators for each item range from 0.15 to 0.42, thus showing that all items in the questionnaire would be sufficiently explained by these common factors.

The three dimensions show high and similar internal consistency in the Cronbach's alphas (networking: 0.97, professional capital: 0.94, and networked improvement: 0.96). Networking is the lowest rated scale (mean = 4.80), networked improvement shows a better rate (mean = 4.88) and the highest rated scale is professional capital (mean = 5.10). The percentage of agreement and disagreement by item in each dimension are described in the Appendix.

Table 2. Rotated Factor Loadings, by Items and Dimensions.

	Networking	Professional Capital	Network for Improvement
In my network we evaluate how our work contributes to our schools' improvement	0.66		
In my network, there are norms for dealing with conflict that arise as a result of differences in opinions	0.65		
My network contributes to solve problems at our own schools	0.60		
In my network, we have created new knowledge by searching for solutions to shared issues	0.60		
My network established mechanisms and communications channels to link up with community actors and institutions	0.59		
In my network, we have shared responsibilities among its members	0.58		
In my network, there are leaders who help resolve differences in opinion and internal conflicts	0.56		
My network facilitates the development of skills and professional development of its members	0.55		
My network's agenda is developed based on the priorities and interests expressed by its participants	0.54		
The members of my network share their schools' practice to achieve our network objectives	0.52		

Being in the network fosters a shared view for defining our network needs	0.50		
My interest to participate in network meetings has increased since the first meeting	0.48		
The members of my network participate actively in the planned activities	0.45		
In my network, I feel I participate at the same level as other members		0.73	
In my network, the opinions of principals and curriculum coordinators are equally respected than those of general members		0.72	
In my network, I feel there is trust to freely express my perceptions and disagreements		0.68	
The decisions made in my network are agreed among its members		0.60	
The tasks in my network are carried out by teams including professionals from across all participating schools		0.50	
In my network, there are spaces of trust and mutual understanding among members		0.47	
I participate in the decision-making process of my network		0.47	
My network favors cooperation among its members		0.47	
School networks contribute to share resources among participant schools		0.37	
Participating in the network has improved my leadership skills			0.75
My network helps me find solutions to problems that I face in my school			0.70

(Continued)

Table 2. (*Continued*)

	Networking	Professional Capital	Network for Improvement
The members of my network understand that the work done is fundamental to improve school management			0.64
I feel very committed to the work we do in my school improvement network			0.61
The actions of my network are organized to address students' educational needs			0.61
The ideas that arise from my network have been implemented as actions or projects in my school			0.56
The participation of the members of my network contributes to the work done in my school			0.53
I use the knowledge generated in my network in my school			0.53
My network promotes that all members are creators of new ideas or projects			0.52
The topics discussed in my network are appropriate to the school context where I work			0.41

One of the limitations of this study is the self-selection of respondents and the effect this could have in their responses, school leaders who did not answer the questionnaire can be different from those who did answer it. This potential response bias was anticipated by explicitly asking the participants for their perceptions of both positive and negative aspects of the SIN strategy, and by reassuring that all responses would be treated anonymously. However, self-selected surveys do not ensure a proper generalization of the result, and they need to be taken with some caution when there are no other data sources about the same phenomena that could be employed to contrast and compare.

MIXING PROCEDURE

While the multi-site case study provides in-depth data from different stakeholders involved in the design and implementation of SIN, it only focused on 15 cases. In the other study, the questionnaire strength is its large scope, collecting data about the perception of SIN considering 398 out of 483 networks, with 1,789 individual responses. However, it is only focused on principals and curriculum coordinators, and the main data are structured in a Likert-type scale. Considering the weaknesses and strengths of both studies, they complement very well, and their mixing helps to generate a good portrait of the SIN strategy during the years 2016 and 2017.

The design of each study was aimed at meeting their own objectives, and it was not anticipated to mix their data. Therefore, in order to produce a coherent analysis of the SIN strategy based on evidence from these two studies, we devised an ad hoc substantive theory mixed-methods research, guided by collaborative inquiry as a theoretical framework (Greene, 2007).

Following this paradigmatic stance, the collaborative inquiry phases were used to mix the findings of each study and answer our general research questions, which were broken into more specific key questions, in a two-stage process. First, findings from the primary study (multi-site case study) were analyzed to respond the key questions, using thick descriptions and concrete examples of the SINs. Second, findings from the secondary study (national questionnaire) were revised to determine the spread of the primary study findings in the country and also allowed to add supplementary information to answer the key questions. Fig. 7 represents the procedure of the mixed-methods research presented in this book.

The three phases of collaborative inquiry were used as deductive categories to analyze the data and inferences of the multi-site case study and the SIN national questionnaire. Also, considering the literature review of collaborative inquiry, themes for each category were defined, and emergent themes were created based on the revision of the studies. Next, Chapter 4 describes the findings of this mixed-methods research.

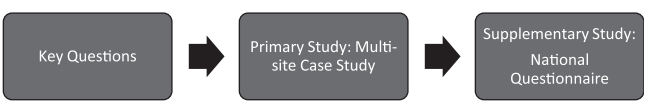

Fig. 7. Mixed-Methods Procedure.