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# School principals at their lonely work: Recording workday practices through ESM logs

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## ABSTRACT

This study used portable technology based on Experience Sampling Methodology (ESM log) to register workday practices of school principals and heads from Chilean schools who were implementing school improvement plans aimed at developing a culture of organizational learning. For a week, Smartphone devices which beeped seven times a day were given to School Principals and Heads of Technical-Pedagogical Units, who then answered closed questions about their current agenda. Six municipal schools in a district of the V Region of Chile participated in the study. The main results support the notion that, at the time of data collection, most school Principals and Heads of Technical-Pedagogical Units were working alone, and if they were interacting with other people, they were always in command. Following underlying assumed roles, most school principals reported performing administrative tasks, while Heads of Technical-Pedagogical Units mainly addressed instructional issues, fostering a rigid framework for the assignment of tasks. Follow-up semi-structured interviews confirmed that participants were not working as a team but rather alone on important issues and urgent matters. Participants regarded the use of the device as a very practical and useful tool to analyze their daily practices. Results are discussed focusing on the use of portable technology to address methodological issues faced when approaching research on educational leadership from a distributed leadership perspective.

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## 1. Introduction

The aim of this paper is to present a tool for research in educational leadership, using portable technology based on Experience Sampling Methodology (ESM log) that enable registering workday practices of school leaders. We report findings on the use of this technology in Chilean school principals and heads who were implementing school improvement plans that required distributed leadership. We argue that, within a mixed-methods approach, this technology can be a useful methodological tool for research on distributed leadership practices.

## 2. Chile's quest for educational improvement

In 2008, Chile started implementing the Preferential School Subsidy Act (Law No. 20.248), a bill which radically changed the system of financing municipal and private-subsidized education<sup>1</sup> by incorporating additional funding to schools based on the amount of 'priority' students indicated by the School. A student is classified as 'priority' if his or her socio-economic background is at disadvantage. The principles behind this legislation are based on the need for greater equity and quality in education. Understanding that higher quality education means also a more expensive education, it funnels more financial resources to those students with a higher socio-economic vulnerability. It is assumed that improving performance standards to evaluate this group requires more resources and more focused support. On the other

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<sup>1</sup> In the 1980s Chile began implementing a market-driven model for the provision of educational services. The General Education Law (Ley General de Educación, LEGE) created two types of publicly funded schools: those owned and administered by the municipalities (municipal schools) and those owned and administered by the private sector (private-subsidized schools). Each type of school receives an attendance-based, per pupil state subsidy. A third type of school is the private school which is owned, administered, and financed by the private sector (private schools).

hand, under the logic of accountability, the provision of more financial resources is tied to achieving improvement targets, which are taken as evidence of the achievement of the goals of student learning.

It follows that this law means not only a change in the financing system of education, but is also expected to impact and transform the understanding of school management in schools. In fact, the Preferential School Subsidy Act requires, as prerequisite for the provision of financial resources, that each institution submit and implement an Education Improvement Plan developed with the school community, addressing actions oriented toward improvement in learning outcomes (language, math, sciences) and in school management: curriculum, leadership, cohabitation,<sup>2</sup> and resources. Each Improvement Plan must contain an assessment of students' learning and of the management areas mentioned before, a set of educational outcome targets to be achieved during the implementation of the Plan, and the educational actions which will be implemented during a time-span of two years in order to improve school performance. The role played by the school principal and the management team in the development and implementation of this improvement plan is fundamental. However, given the nature of the task to perform, the entire school community will be held responsible for the success or failure of this plan.

This new policy has a previous antecedent: El Sistema de Acreditación de la Calidad de la Gestión y Educación (SACGE, National Accreditation System of the Quality and Management of Education). Implemented between the years of 2003 and 2007, this system sought to establish standards for school management practices related to school performance. Research on the implementation of the SACGE (Montecinos, Sisto, & Ahumada, 2010) showed that schools who achieved high standards shared non-traditional forms of management which involved organizational (vs. individual) learning and distributed leadership.

### 3. Distributed leadership in schools

The perspective of distributed leadership in schools is fairly recent and takes a stance that departs from the traditional understanding of leadership as an innate trait and on the role of the individual leaders; rather, it calls for the need to consider the distribution of tasks and social influences, the emergence of leadership in action, and the role of non-formal leaders (Camburn, Rowan, & Taylor, 2003; Donaldson, 2006; Leithwood, Mascall, & Sacks, 2009; Robinson, 2008; Spillane & Hunt, 2010).

Leithwood et al. (2009) understand distributed leadership as leadership that emerges from everyday actions involving the different people responsible for the task. Camburn et al. (2003) understand distributed leadership as a set of formally mandated functions that leaders should play in organizations.

Robinson (2008) points out two approaches in the study of distributed leadership: one whose emphasis is on the distribution of roles in the implementation of a task and the other on the social influence process that occurs while performing the task. She proposes that both approaches are complementary.

Donaldson (2006) highlights the need for leadership to respond to emerging requirements of the organization, and proposes that the leadership of the principals must address three fundamental dimensions: the relational dimension, which involves openness to mutual influence and the ability to trust each other; the dimension of purpose, which links the individual commitment to organizational purposes; and a dimension related to actions which involves sharing beliefs and implementing them in daily tasks. This requires that leadership be understood as a collective and distributed flow of influence to all members of a community rather than an individual phenomenon associated with certain personality characteristics.

In this study, we understand distributed leadership as leadership that emerges from everyday actions involving the different people responsible for the specific task of developing and implementing school improvement plans. This conceptual framework, which looks at distributed leadership from relational dimension – a dimension of purpose and actions – assumes its collective construction through everyday practices.

### 4. Facing the challenge of studying distributed school practices: the ESM log as a methodological tool

Understanding school leadership as distributed leadership requires studying leadership as a practice, as opposed to studying leadership as traits- or competency-based (Carroll, Levy, & Richmond, 2008; Leithwood et al., 2007; Spillane, Halverson, & Diamond, 2004). As Carroll et al. (2008) pose,

A practice perspective, in contrast, reminds us that the overwhelming majority of action takes place 'on the hoof' (Chia & Holt, 2006: 243), involves 'skilled, improvised in-situ coping' (Chia, 2004: 33) and 'takes place unreflectively, on-the-spot and in the twinkle-of-an-eye' (Chia & MacKay, 2007:238). The radical nature of a practice perspective invites us into what de Certeau (1984) terms 'the everyday' and Whittington (1996:734) terms 'the unheroic work of ordinary [strategic] practitioners in their day-to-day routines' (p. 367).

However, as Spillane et al. (2004) argue, in school leadership research, "(...) while new organizational structures and new leadership roles matter to instructional innovation, what seems most critical is how leadership practice is undertaken. Yet, the practice of school leadership has received limited attention in the research literature" (p. 3).

Taking a distributed leadership stance involves, therefore, some serious methodological challenges. A first challenge is to move beyond retrospective semi-structured or in-depth interviews where participants recall on previous experiences. Chen (2006) notes that one of the great challenges of social science research is to overcome the shortcomings present in the flashbacks of the subjects, known as memory recall bias. A second challenge is how to understand the *emerging* action occurring in-situ while developing a practice (Engeström, 1999). Even contemporary discursive perspectives that understand discourse as action meet the challenge of studying practice as unreflective, on-the-spot actions which shape patterns of collective meaning (Chia & MacKay, 2007). And yet a third challenge emerges, which is how to

<sup>2</sup> In Chile the concept used to address interpersonal relations and social conflict in schools is *convivencia*. A literal translation of the concept is cohabitation or living together.

**Table 1**  
Advantages and disadvantages of the use of ESM in social research.

Advantages	Disadvantages
Records events fresh on their minds (Spillane & Zuberi, 2009) (Uy et al., 2010)	Centered only on few subjects at the time (Spillane & Zuberi, 2009)
Ecological validity (Uy et al., 2010)	Overestimates certain experiences (Koro-Ljungberg et al., 2008)
No need to record everything (Spillane & Zuberi, 2009)	Increases the work of participants (Chen, 2006)
Allows recording random events (Spillane & Zuberi, 2009)	Expensive (Koro-Ljungberg et al., 2008)

study *patterns of action* in every-day professional activities. Therefore, we believe that research on distributed leadership in schools should question the traditional models of research methodology in order to understand the dynamics of the processes involved in the distribution of practices of leadership. Instead of placing the analysis on the individual and on individual process, the focus should be placed on the interaction pattern and the characteristics of the task performed.

We propose that the use of technology devices designed to measure everyday experiences is a useful tool that can enable advances in this field of research. Traditional paper-and-pencil logs, as in the form of field notes, have been used for decades among qualitative researchers (Koro-Ljungberg, Bussing, Williamson, & M'Cormack-Hale, 2008). However, current technology allows for in-situ recording of everyday workday actions which, together with reflexive analysis of these actions, can become an enriched tool for measuring and analyzing school practitioner's everyday practice.

Taking this methodological stance, we chose to use inductive methodologies that include but are not restricted to the explicit discourse of the participants, and which focus directly on *what they do*, that is, on their everyday practices. To enrich our understanding of these practices, we searched for a methodological tool which would facilitate the assessment of experiences in natural settings, in real-time, and in several instances.

We adopted a methodology based on experience sampling methodology log (ESM log) assisted by mobile technology, one that would enable us to register the daily activities of the School Principal and of the Head of the Technical-Pedagogical Unit<sup>3</sup> (from now on, TPU Head) for one week and then analyze that log, which would include specifically crafted software to register where they were, with whom, what kind of work they were performing and who was in command of that task. Following Szollos (2004), the challenge was to incorporate mobile technology within a mixed-methods design in order to identify and record school practitioners' everyday practices and experiences.

The experience sample method (ESM) is defined as a "quasi-naturalistic method of research where subjects point at random for a day or weeks on the quality and nature of their experience" (Kubey, Larson, & Csikszentmihalyi, 1996, p. 99). This methodology uses various devices to record current events in the lives of subjects at different temporal spans.

ESMs have, been previously used in the fields of medicine and mental health (Csikszentmihalyi & Larson, 1992; Delespaul, Resi, & Devries, 1995). Csikszentmihalyi and Larson, (1992), for example, developed an ESM aimed at describing variations in self-reports of psychological processes such as emotions and patterns of thoughts. Spillane, Camburn, Pustejovsky, Pareja, and Lewis (2008) were the first to use technology-assisted ESM logs for research in school leadership from a distributed perspective. For them, "the ESM log captures behavior as it occurs within a natural setting" (p. 192).

According to Uy, Foo, and Aguinis (2010) ESMs record three types of events: 1) interval contingents, where the subject answers every so often, 2) contingent events, where the subject responds only when a certain type of event occurs, and 3) signal contingents, where participants respond randomly when some sort of alarm sounds. For this study we selected the latter form, since the goal was to understand the actions and perceptions of managers at different times of day.

While in the past ten years researchers have increasingly used this approach, scholars have identified several advantages and disadvantages it poses for qualitative research purposes, listed in Table 1. Upon pondering them, we believe that this methodology facilitates the understanding of distributed leadership in school settings. If we understand distributed leadership as revealed by leadership witnessed in everyday actions, ESM is a highly reliable instrument to approach the phenomenon.

Some of the main reasons for choosing this approach, and to implement it through portable technology devices, are the actual school context and the intense turbulence in which it is embedded, both internally and externally, where many important events are always taking place. As Weick (1996a) has posed, educational administrators often invoke the metaphor of fire fighting to describe their practices within the school setting. According to Weick (1976, 1996b) this is due to the particular conditions of school organizations as loosely-coupled systems, that increase their vulnerability to failure. Since the everyday actions and practices of the Principals and TPU Heads are very hard to follow and analyze due to the diversity of the responsibilities in which they involved in, ESM logs assisted through mobile technology was the alternative of choice. In summary, probing a tool which could assist researchers and practitioners in identifying and analyzing everyday practices seemed promising.

## 5. Method

Through a mixed-methods sequential design, the investigation was conducted in two stages. In the first phase, we designed and implemented a system for recording everyday experiences (REC) based on the experience sampling methodology log (ESM log, Spillane et al., 2008). In the second phase, we performed follow-up semi-structured interviews with participants from the first phase, in which we shared and discussed the primary outcomes in order to achieve in-depth understanding of the data.

<sup>3</sup> The LEGE divided the administration of public municipal schooling into two categories – administrative issues and pedagogical issues- and designated two key actors: the school principal, in charge of administrative matters, and the Jefe de Unidad Técnica-Pedagógica (Head of the Technical-Pedagogical Unit), in charge of pedagogical issues. This stale division is still strong in municipal schools, in spite of efforts to move towards the creation of Equipos de Gestión Educativa (Educational Management Teams, composed of the School Principal, Head of TPU, and other actors chosen by the prior two, generally the school Inspector and one or two key teachers).

**Table 2**  
Logged questions and answer choices of the log record.

Questions	Choices of answer
Where are you?	My office, Staff room, Classroom, Schoolyard, DAEM's office, DEPROV's office, another.
Who is in charge of this activity?	Me, Principal, TPU head, Teachers, Students, Parents, DAEM's team, DEPROV's team, another (whom?)
What type of activity is working?	Administration, Curriculum and Instruction, another (whom?)
How important is the activity for the school?	Very important, important, somewhat important, not important.
How urgent is this activity?	Very urgent, urgent, somewhat urgent, not urgent.
Was the activity planned in advance?	Yes, No, I don't know.

Note: DAEM = Dirección de Administración de Educación Municipal, is the local district's Educational Department. DEPROV = Dirección de Educación Provincial, is the Province's Educational Head Office.

5.1. Participants

The participants were six principals and six Heads of TPU of six municipal schools implementing the Preferential School Subsidy Act. We decided to work with people who hold these positions because they carry the formal leadership in urban educational institutions, and also because they are primarily responsible by the implementation of actions of improvement plans.

5.2. Data collection techniques

*Phase 1: ESM log.* To implement this methodology we used portable technological devices, specifically, Smartphones HTC Touch 3852 with 200 MHz, 192 MB Memory, with Windows Mobile 6.0 as operating system, which were scheduled to prompt the target subject and log the session. A series of questions were designed and programmed with closed response options in order to register actions performed by Principals and Heads of UTP that had been previously identified as evidence of leadership. These questions are detailed in Table 2. The contents of the questions considered the conceptual framework of distributed leadership and school characteristics of the Chilean education system. The design was also influenced by research conducted previously by Spillane et al. (2008) which used a similar apparatus to train managers of educational institutions in the United States.

In terms of programming, each portable unit was programmed to enable indirect interaction between the research team and the School Principals/TPU Heads, who carried the portable unit. The units contained an executable software module, which had been previously

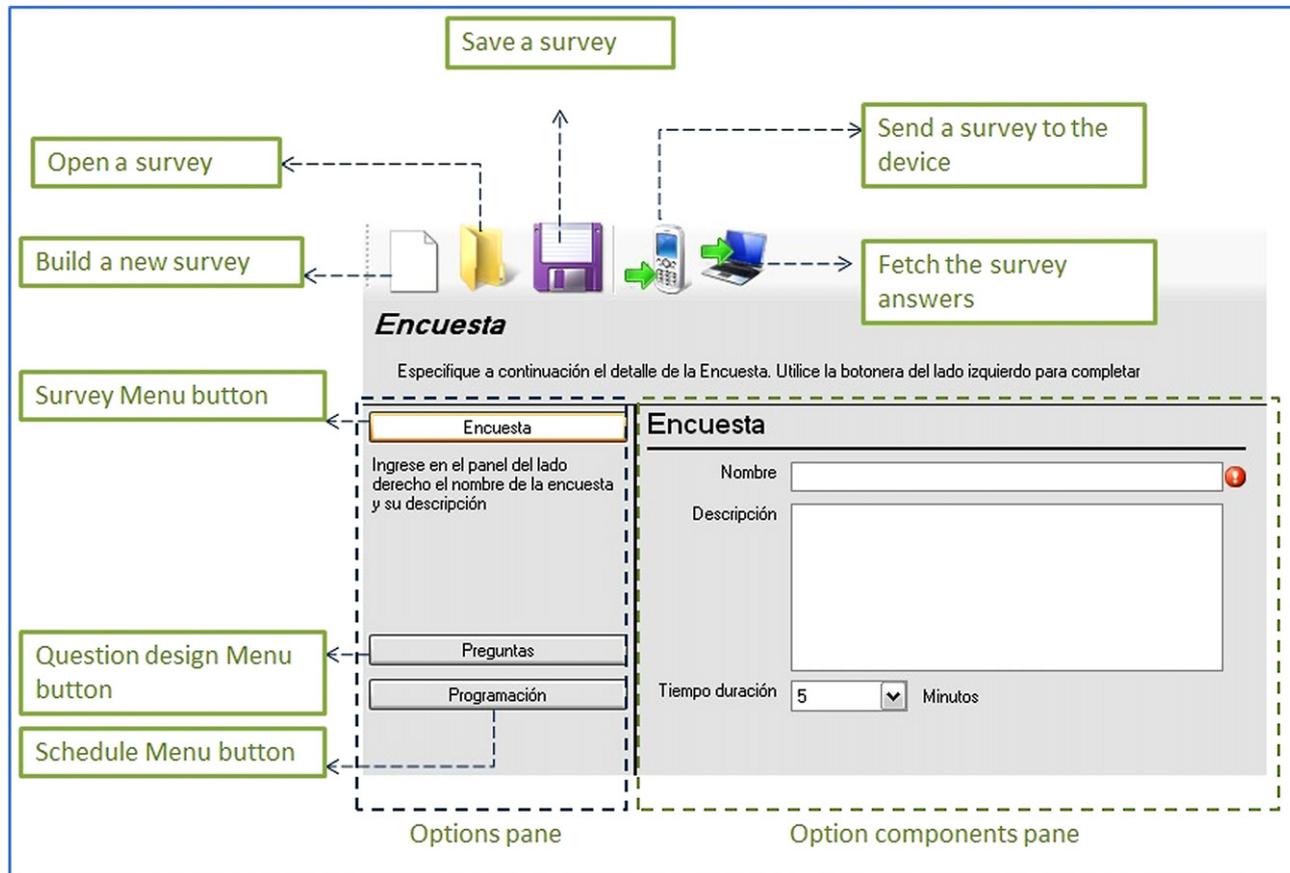


Fig. 1. Top-level screen used by the research team to design a questionnaire.

uploaded by the research team according to the conceptual terms described above, following a standard form and adjusting parameters from a list controlled by a program crafted for this study. Fig. 1 depicts the main screen of the design of questionnaire using the matrix program (in Spanish).

The matrix program allows the researcher to create a set of questions organized in a standard questionnaire format, to be subsequently administered through screenshots in the portable unit. The researcher can therefore enter, edit, and delete questions, as well as include exceptional questions which are activated when the school principal cannot complete the sequence of questions. The researcher is also able to program the calendar of activation of the questionnaire, as well as the time intervals so that the Smartphone gets activated through an alarm clock and/or by vibration, prompting the school principal/TPU Head to answer the questionnaire displayed at that time in his/her portable unit. Fig. 2 shows the degrees of freedom of the researcher in order to design the questionnaire (in Spanish). Partial results are stored in the portable unit. At the end of each session (day) results become available to the researcher in Excel format for processing.

*Phase 2: semi-structured interviews.* Follow-up semi-structured interviews with the school principals and Heads of TPUs who had participated in the previous phase were conducted in the six schools. These interviews had two objectives: to strengthen our understanding of the results reported in the device outputs; and to understand the participant's perceptions of the advantages and disadvantages of using this methodology for the analysis of educational leadership.

### 5.3. Procedure

#### 5.3.1. Pilot study

We conducted a pilot implementation of the device for a week with two subjects: a principal of a school (who did not participate in Phase 1) and an academic research team member. This pilot study had three objectives: to review the design of the questions of the device for clarity, to monitor the stability of the portable devices and to know the difficulties that the management of the devices could present to the participants. As a result, some questions were edited in order to improve a clear understanding on behalf of the participants.

*Phase 1.* For a period of one working week (Monday to Friday) two devices were given simultaneously to two participants in each of the six schools: the school principal and the Head of UTP. The device was delivered on Monday morning to each school. Members of the research team explained the general procedures for response and accompanied the participants during the first two applications. Alerts marked devices through sound or (optionally) vibration randomly seven times a day at intervals of approximately 1 h, from 9:00 to 18:00. Units were returned to a member of the research team by the participating school at the end of the week.

The screenshot shows the 'Preguntas' application interface. It is divided into several sections:

- Top Left:** A toolbar with icons for adding, dropping, uploading, and downloading questions and options.
- Top Right:** A text box for the question and description, which will be displayed to the user. Below it is an 'Excel campo' (Excel field) for identifying the question in the spreadsheet.
- Center:** A list of questions and options. The first question is '¿Dónde está?' with options: 'Oficina propia', 'Oficina Jefe UTP', 'Oficina coordinador área', 'Patio', 'Sala de clases', and 'Otro'. Below it are three more questions: '¿Con quién está?', '¿A qué área corresponde esta actividad?', and '¿Con quién tomará esa decisión?'. A 'Pregunta excepción' (Exception question) dropdown is at the bottom.
- Bottom Left:** A text box explaining that the user can choose one or several options if multiple choice is enabled.

Annotations with dashed arrows point from the text boxes to the corresponding parts of the interface:

- The top-left text box points to the toolbar.
- The top-right text box points to the 'Pregunta' and 'Excel campo' fields.
- The bottom-left text box points to the 'Multiple selección' checkbox.

Fig. 2. Degrees of freedom available for constructing a questionnaire.

**Table 3**  
Rate of daily responses to the ESM log.

	Monday	Tuesday	Wednesday	Thursday	Friday	Global	% Expected <sup>a</sup>
Principal	25	20	24	24	14	107	50.9%
TPU Head	17	22	26	22	2	89	42.3%
Global	42	42	50	46	16	196	46.6%

<sup>a</sup> 210 is the maximum rate of response per participant during the week.

*Phase 2.* The in-depth interviews were conducted at Pontificia Universidad Católica de Valparaíso, during a working session in which researchers shared global results from the first phase of the study with the participating schools. Informed consent was obtained from participants. The interviews were audiotaped and transcribed.

### 5.3.2. Data analysis

Outputs from the resident program in the portable units are delivered in .xls format, so the first treatment used Microsoft Excel 2007. The subsequent descriptive analysis was performed using SPSS 15.0.

## 6. Results

Considering that the device was activated seven times a day for five days, the maximum response that an individual could register in a week was 35, and considering it was used by twelve individuals (six principals and six Heads of UTP) the maximum possible responses were 420 (210 by each type of participant).

It is important to take into account that if a participant had not answered after 2 min, the device jumped to the next time interval, thus canceling the response, enabling the device to sound off at the next interval. The maximum rate of response reached was 107 for Principals and 89 for Heads of UTP, with a total of 196. This is about half of registrations that were expected (see Table 3).

The results presented below are based on these figures.

### 6.1. Places where the actions were performed

Both Principals and Heads of TPU reported being in their office most of the time (53.27% and 51.69% respectively). Whereas the Heads of TPU had several records in the classroom (17.98%), the Principals rate was almost three times less in the same place (7.5%). Finally, Principals have an interesting number of “other” events, accounting for 21.5% of all answers to prompts (see Table 4).

### 6.2. Distribution of actions

In reviewing the statements about who was directing the activities, the log shows that most of the time Principals and TPU Heads were in command (57.94% and 58.43% respectively). According to the Principals, they themselves and the TPU Head were in charge of most of the activities that were registered (61.68%), while Heads of TPU for this analysis reported a higher percentage (78.65%). The only other actors identified as important were management teams, with a 14.02% and 12.36% respectively. Finally, Principals also reported that 17.76% of the activities were lead by “others” (see Table 5).

### 6.3. Type of actions

Principals appear to work mainly on administrative matters (41.12%) over pedagogical issues (22.43%). This in conflict with what TPU Heads declared; they reported to be working both on pedagogical issues (33.72%) as well as in administrative issues (28.09%). Both Principals and Heads of TPUs declared that about a third of their activities did not fit within the domain of administrative or pedagogical matters (see Table 6).

### 6.4. Reported importance of actions performed

Principals reported that a cumulative 68.22% of the tasks they were working on were either very important or important, while TPU Heads reported a 70.79% (cumulative). Thus, according to the data, Principals and TPU Heads spend 31.78% (cumulative) and 29.21% (cumulative) of their time respectively on tasks that are either somewhat important or not important (see Table 7).

**Table 4**  
Frequency response to the question: Where are you?

	Principal	%	TPU Head	%	Global	%
My Office	57	53.27%	46	51.69%	103	52.55%
Staffroom	8	7.48%	10	11.24%	18	9.18%
Classroom	6	5.61%	16	17.98%	22	11.22%
Yard	11	10.28%	10	11.24%	21	10.71%
District office	2	1.87%	0	0.00%	2	1.02%
Other	23	21.50%	7	7.87%	30	15.31%
Global	107	100.00%	89	100.00%	196	100.00%

**Table 5**  
Frequency response to the question: Who is in charge of this activity?

	Principal	%	TPU Head	%	Global	%
Principal	62	57.94%	18	20.22%	80	40.82%
TPU Head	4	3.74%	52	58.43%	56	28.57%
Management team	15	14.02%	11	12.36%	26	13.27%
Student	1	0.93%	0	0.00%	1	0.51%
District	5	4.67%	0	0.00%	5	2.55%
Ministry of Education	1	0.93%	0	0.00%	1	0.51%
Other	19	17.76%	8	8.99%	27	13.78%
Global	107	100.00%	89	100.00%	196	100.00%

### 6.5. Urgency of the actions

Most Principals declared that the tasks performed were urgent or very urgent. The Principals declared to perform very urgent or urgent most of the time (85.99%). The analysis is similar from the registered of the TPU Heads with 97.75% (see Table 8).

### 6.6. Planification of the actions

The principals reported that a little more than half of the actions they were performing had been planned in advance (53.27%). TPU Heads show a higher frequency compared to the same criteria (85.39%) (see Table 9).

### 6.7. Differences between principals and TPU heads

The device logger show marked differences between the actions undertaken by Principals and TPU Heads. To clarify these differences and following the logic of mixed design outlined in the methodology, in a second phase we presented and discussed these results with the participants through semi-structured interviews with the aim of obtaining an in-depth understanding of the data.

The participants perceive their tasks as complementarily and strongly differentiated. In five of the six schools, the Principals deal with the bureaucracy of the school, as well as take care of emerging issues that arise in everyday school culture. In contrast, TPU Heads were responsible for the preferred areas of teaching, which means more direct contact with teachers and classroom work.

A major player that emerges from these data is the District. In the interviews, the bureaucratic system in which schools are embedded in was highlighted by participants. According to the findings, lack of planning for the municipal educational administration has important implications for their work in schools, making the execution of internal plans and development activities focused on pedagogy – curriculum difficult. In this scenario, the Principal is the main link with the foreign agent, identified as the link between the school and the exterior, while the TPU Head is responsible for maintaining the link between school work and the interior of the schools. As we can see in Table 10, while school principals exhibit an outwards approach, the typical TPU Head's workload faces inwards.

Prompted about who is the "other" – an answer available in some of the options – the spread of responses was very high between schools, ranging from 6 to 37. Thus, it is not possible to identify a pattern or a category that encompasses participants' responses; rather, this category "other" reflects the turbulence of the environment in which the school is embedded.

### 6.8. Perceptions of the ESM log methodology

Finally, we asked each participant to report their experience with the devices. All respondents noted that it was a very positive experience. They especially declared that the use of the results allowed them to reflect on the many activities that take place every-day and how the school setting, with abundant, diverse and urgent tasks, forces them to postpone planned tasks.

*"This kind of research it is very useful to us, it allows us to see what we are doing throughout the day"* (interview 5)

With respect to the usability of the device, they perceived the device to be noninvasive and, once the first application was answered, easy and quick to respond. They also reported the device to be very attractive to use and the recorded events useful to analyze as part of their own reflexive action-oriented analysis. With respect to the negative aspects, they noted that this methodology meant a new practice and responsibilities to them, which sometimes made it hard to answer given their workload. This helps to explain the low rate of recorded responses to prompts. They also noted that the design of the questions and answer choices did not always allow them to clearly describe the activity they were performing, since they belong in a broad spectrum of domains that are difficult to identify. The detail of other statements is presented in Table 11.

**Table 6**  
Frequency response to the question: What are you working on?

	Principal	%	TPU Head	%	Global	%
On administration	44	41.12%	25	28.09%	69	35.20%
On pedagogical	24	22.43%	30	33.71%	54	27.55%
Other	39	36.45%	34	38.20%	73	37.24%
Global	107	100.00%	89	100.00%	196	100.00%

**Table 7**  
Frequency response to the question: How important is this activity to the school?

	Principal	%	TPU Head	%	Global	%
Very important	18	16.82%	34	38.20%	52	26.53%
Important	55	51.40%	29	32.58%	84	42.86%
Somewhat important	30	28.04%	22	24.72%	52	26.53%
Not important	4	3.74%	4	4.49%	8	4.08%
Global	107	100.00%	89	100.00%	196	100.00%

## 7. Discussion

This study sought to deliver, through an innovative methodology, a tool for research in distributed leadership. Conceptually, the distribution of leadership departs from traditional views about the natural leader and approaches, in that we were not interested in the leader as a person, but in the pattern of interactions between subjects performing tasks (Losada & Heaphy, 2004), this time within the broad domain of school management. One of the major challenges for the coming decades will be to develop methodologies that allow us to study these patterns of interaction with scientific rigor. To do this, the use of ICTs, incorporated in mixed-method designs, proved to be a very useful addition to the researcher's toolbox.

One of the central aspects of this study using ESM log was to generate knowledge and learning concerning the use of technology-based methodologies to help us improve our ability to follow the actions of participants and to associate these actions with their perceptions of their daily activities, in order to construct a broader and deeper understanding of the processes of distributed leadership within a school setting.

One of the main contributions of this study was to develop a system for recording every-day experiences that could give account of leadership practices within schools. This type of methodological approach has the advantage of using the inductive nature of everyday recording, i.e. a real-time registration. In this sense, one of the greatest assets of ESM logs assisted by portable technology is that it allowed following the interactions between principals and TPU Heads on their natural settings (Spillane et al., 2008). In this sense, we agree with Chen (2006) that one of the main advantages of using ESM assisted by portable technology is that it allows in situ recording while participants still have the events available in their memory. Therefore, using alarm-activated logs not only facilitates recording current events, but also prevents memory biases.

We hold that this approach is less invasive than the presence of the researcher. In this respect, even when participants reported feeling uncomfortable using the device on the first day at school, having been previously trained, they reported that their discomfort gradually declined. Therefore, we believe that an ecological approach to reduce the presence of outsiders can help us understand the dynamics and tensions of every school with reduced interference with their daily context (Uy et al., 2010).

In our view, the features of this methodology can moreover avoid social desirability that may be present during interviews. Naturally, a risk to beware is that participants may not respond in a reliable way, even throughout one full week, supported by arguments unavailable to the researcher. On the same key, it also became clear that one of the major disadvantages is that a closed question is not suitable to explain why or how the reported practices get deployed.

While acknowledging the positive aspects of this experience, we would like to share with our readership some of the main limitations of these findings that may be useful when choosing this methodology for similar research purposes. Two important limitations that may be generalized is the sample size chosen for the study and the number of invalid responses or no responses as a result of the weekly application. The low number of responses can be traced to how novel it was for Principals and TPU Heads to participate in this experience. The novelty of using the methodology, specifically the device, as well as the lack of clarity that some managers about the available options to select, led to a much lower frequency of answers to prompts than expected. For future implementations of the device it is necessary both to spend more time calibrating the instrument in the field and to develop tools to provide timely support for the user of the device so that individuals are able to sort out practical issues concerning the operation of the equipment with examples that mock interaction with the choices being provided in the prompts.

Finally, an important issue that stemmed out of the logged vast amount of "other" category scored in each of the questions asked was the educational context, which led us to focus on understanding the phenomenon of context-sensitive distributed leadership. In this sense, responses grouped everything that, in the opinion of the subjects, did not belong in any of the categories listed (all closed). We attribute the "other" category as a collection of hints that point to organizational "turbulence", which is to be expected within a school context (Weick, 1996a,b), and which is certainly a condition that Principals and UTP Heads, as well as the entire school community, should recognize and master in order to successfully implement their school improvements plans. Methodologically, this finding led us to recognize the limitations of using only instruments with closed questions and answers, and also suggested the need to use mixed methodologies in similar studies aimed at understanding the distributed leadership process among principals and teachers.

Therefore, the triangulation of information using qualitative methods hosting an environment where subjects are able to reflect on and even contest the logged evidence seems not only desirable but necessary. Thus, for future research, we would endorse logging practices using mixed design methodologies (Burke Johnson, Onwuegbuzie, & Turner, 2007) in order to yield a more comprehensive understanding of school leadership from a distributed perspective. This mixed-method approach is also being used by Spillane and Hunt (2010) to identify patterns of school principal practices.

**Table 8**  
Frequency response to the question: How urgent is the activity for the school?

	Principal	%	TPU Head	%	Global	%
Very urgent	45	42.06%	64	71.91%	109	55.61%
Urgent	47	43.93%	23	25.84%	70	35.71%
Somewhat urgent	13	12.15%	2	2.25%	15	7.65%
Not Urgent	2	1.87%	0	0.00%	2	1.02%
Global	107	100.00%	89	100.00%	196	100.00%

**Table 9**  
Frequency response to the question: Was this activity was planned in advance?

	Principal	%	TPU Head	%	Global	%
Yes	57	53.27%	76	85.39%	133	67.86%
No	45	42.06%	13	14.61%	58	29.59%
Do not know	5	4.67%	0	0.00%	5	2.55%
Global	107	100.00%	89	100.00%	196	100.00%

**Table 10**  
Summary principals – TPU head differences.

Questions	Explication concerning differences between School Principals and Heads of TPU
Where are you?	Principals more on their offices and outside the school. TPU Head more with teacher and classrooms. “The TPU Head visited more and work directly with the teachers” (interview 4)
Who is on charge of this activity?	Either the Principal or the TPU Head always lead the activities. “The difference depends on who takes the responsibilities first of the two of us” (interview 2)
What are you working on?	Principals in charge of administrative and external issues. TPU Heads leading pedagogical matters and internal issues. “The Principal (me) is in charge of the administrative business, while the TPU Head works only on pedagogical matters” (interview 5)
How important is the activity for the school?	Principals and TPU Heads not always work on important issues. Too many bureaucratic and emergent problems. “The Principal spends many hours working outside the school on not important activities. The important ones are related with the inner works of the school” (interview 1)
How urgent is the activity for the school?	Principals are responsible for unplanned and urgent matters. TPU Head works more on planned tasks. “... the district office are always required urgent paperwork which the principal must take care of” (interview 1)
Was this activity planned in advance?	Principals work with the emergency facing external issues. TPU Heads work with planned task facing internal issues. “... my work (TPU Head) is more related to the improvement plan, so I take a personal plan every week which I can complete very often” (interview 4)

As to the issue of whether ESM logs assisted by portable technology are a useful tool for research in the field of school distributed leadership, the findings of this study do provide supporting evidence. The meaning of distributed leadership was taken in this study as leadership that emerges from everyday actions involving different people with different degrees of responsibility during the development and implementation of improvement plans. As stated, we were more interested in investigating the interactions that occur between them than on the actions of separate individuals.

In this sense, the results reveal that the relationship between Principals and TPU Heads can be cast as a solitary relationship (most of the time each of them act in solitude in the confinement of their offices), in which tasks tend to be divided thematically (administrative and pedagogical) and are consistent with traditional views of school management. As we have described, the General Education Law created in the 1980s assigned two roles to school management in municipal contexts: a Principal, in charge of administrative tasks; and a Head of the Technical-Pedagogical Unit, in charge of pedagogical issues. In spite of current and updated policies which promote distributed leadership and collective teamwork, such as the Preferential School Subsidy Act that aims at getting schools to commit to school improvement plans, the results from the ESM log data provided by this study show that this traditional division of roles and tasks still holds strongly in the municipal schools studied.

As Spillane (2006) poses, it is difficult to think about installing collaborative leadership in cases such as this, where leaders do not seem to develop these practices within their own teams. On the contrary, as the analysis from their daily practice that the ESM data suggests, each one acts within areas that belong in particular domains which – although perceived by them as being complements – are dealt with almost in parallel and in isolation. Since they are supposed to lead the school improvement process, we need to assess the impact of an in-situ relation in which school principals and TPU Heads share little and work on parallel, yet complementary tasks.

Current literature emphasizes the pedagogical leadership that school management teams should undertake (Bolívar, 2010). Nonetheless, our findings suggest that school principals mainly undertake administrative tasks, whereas the pedagogical actions are undertaken by the TPU Heads. This traditional division of work poses a challenge, since school principals do not assume that they should provide pedagogical leadership. These results are consistent with assessment recently made by Anderson (2010), who commented that – within the Chilean context of school management – administrative and pedagogical issues compete for the available executive time in what also appears to be a dispute as to the scope and expertise that each is supposed to provide. However, interpretation of these findings should take into consideration recent findings from Camburn, Spillane, and Sebastian (2010) who, through the use of daily logs, found that US schools principals allocated most of their time on management, faculty and staff issues and student affairs, and less time on instructional leadership practices. Therefore, it seems that the rigid division of administrative versus pedagogical tasks between Chilean principals and heads, only adds up to the seemingly global difficulties that school principals have in allocating time to instructionally-aimed practices.

**Table 11**  
Perceptions about the methodology.

Advantages	Disadvantages
Reliable “... the results are a true image of our work in the school” (interview 2)	Lack of Options “...we miss options related to working environment and external agents” (interview 2)
Interesting “... the data give us an excuse to assess on what are we using our time and energy on” (interview 2)	Easy to forget “Sometimes I left it on my office drawer and did not answer it until the next day” (interview 3)
Minimally invasive “It was not a problem to answer it and continue working” (Interview 3)	Limited Closed Answer Options “...it is necessary to identify more precisely the other [option]” (interview 1)

Likewise, it is surprising how other actors of the school community, such as teachers and students, do not get involved in implementing the improvement plan. We may assume that this instance has been taken primarily as a task for Principals and TPU Heads isolated from the rest of the school community, unable to involve other parties in meeting the challenge of improving the school learning outcomes of their students. This “two-some isolation” statement of fact is often uttered by school principals and TPU Heads (Spillane et al., 2008).

Our findings suggest that both the School Principals and TPU Heads perform interdependent tasks developed in different contexts, but it is not clear if both of them are seeking the same goal. This situation makes us doubt that a distribution of collective leadership as proposed by Spillane (2006) is possible under the current division of work. Hence, we conclude that the scenario portrayed by the ESM log protocol findings is clearly not of the distribution of leadership type as proposed by Spillane (2006). Although less clear, it also seems the educational leadership of these schools is also neither of the distribution of collective leadership type (Spillane, 2006) since, although interdependent tasks are undertaken, it is not clear that they seek the same goal; nor of the coordinated distribution of leadership type (Spillane, 2006), as the work of both appears to take place in solitude, is not sequential, and anchors on established roles.

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