

Leadership for learning: What are the principals' tasks that most impact in the student learning?

Liderazgo para el aprendizaje: ¿Qué tareas de los directores y directoras escolares son las que más inciden en el aprendizaje de los estudiantes?

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Resumen

El estudio sobre la distribución del tiempo de los directores escolares y sus efectos sobre el desempeño de los estudiantes es una productiva línea de investigación educativa que ha aportado datos interesantes para la mejora de los centros educativos. El presente estudio busca determinar la incidencia de la distribución del tiempo de los directivos escolares en el desempeño de sus estudiantes, e identificar los factores que inciden sobre dicha distribución. Para ello se hace una explotación especial de la Evaluación General Diagnóstica de Primaria realizada en España en 2009. Los resultados indican que los estudiantes de los centros cuyos directores dedican más tiempo a tareas pedagógicas obtienen significativamente mejores resultados que los que dedican a actividades administrativas. También que el género, edad y formación para el desempeño del directivo, así como la titularidad y el tamaño del centro son factores que inciden en la distribución de su tiempo.

Palabras clave:

Dirección escolar, Distribución de tiempo, Organización escolar, Educación primaria

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Abstract

The study of the time allocation of school principals and their effects on the performance of their students is a productive research line that has provided interesting educational information to school improvement. This study aims to determine the incidence of time allocation of school principals in the performance of their students, and to identify the factors that influence the distribution. For that purpose, special data mining of the General Diagnostic Primary Assessment held in Spain in 2009. The results show that students in schools whose principals spend more time on educational tasks get significantly better results than those who spend on administrative activities. Also gender, age and specific training for being principal, and the school ownership and size are factors than influence on time allocation.

Keywords:

School leadership, Task allocation, Management, Primary education

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School principals' time allocation to different tasks and how this affects school improvement and students' performances constitute a productive line of research in

education that has been developed worldwide for over 40 years (Lee & Hallinger, 2012). The underlying hypothesis is that certain tasks performed by the head teacher have a greater

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effect than others in generating a school dynamic capable of meeting its aims more often and with better results. In this way, prioritizing goals and objectives is one of the main challenges facing school principals today (Goldring et al., 2008; Murillo, Barrio and Pérez-Albo, 1999; Silins and Mulford, 2010).

However, as Lee & Hallinger (2012) have shown, both the principals' time allocation and its impact differ substantially from one country to another, and therefore, we find once again that it is not possible to rely on studies conducted in other circumstances. The only study carried out to date in Spain that examines this allocation and relates it to student performance is already 14 years old (Murillo & Barrio, 1999) and needs to be updated.

In this research, using current official data and a representative sample of the Spanish state, the aim is to delve deeper into Spanish principals' time allocation in Primary Schools and its impact on students' learning. To this end, the General Diagnostic Evaluation of Primary Education drawn up in Spain in 2009 was subjected to specific data mining techniques using multilevel models.

Literature review

Although since the 1960s it is possible to find studies of time allocation by school principals, it is only from the 1980s that a fruitful line of research in education has been developed, seeking to gain more in-depth knowledge both of a descriptive nature and of the analysis of the school dynamic. Among the most recent studies carried out in the 1980s are those of Burke (1980), Eberts & Stone (1988), Ghosey (1987), Hallet (1985), Kmetz and Willower (1982), Martin and Willower (1981), and Osborne & Wiggins (1989). In the 1990s, major contributions were made by Gorman (1993) and Helps (1994); and, in this century, we find works such as those of Buttram, Mead, Loftus, and Wilson (2008), Goldring et al. (2008), Horng, Klasik & Loeb (2010), Larry (2003), Murillo & Román (2013), Rayfield & Diamantes (2004), Robinson, Lloyd, and

Rowe (2014); Spillane, Camburn & Pareja (2007), Taylor (2007), and Walker (2009).

In Spain, two works stand out: on the one hand, the study by Murillo & Barrio (1999) with data on 437 principals including Primary Education head teachers. And on the other hand, an interesting recent paper by López-Yáñez, García-Jiménez, Oliva-Rodríguez, Moreta-Jurado and Bellerín (2014) regarding the daily activity of principals and head teachers.

The methodologies applied in these works vary immensely. Among them, we find both structured and informal observation of the activities undertaken by the principal (Martinko & Gardner, 1990), in-depth interviews, poll studies (Eberts & Stone, 1998), ethnographic research (Wolcott, 1973), and self-reporting diaries (Goldring et al., 2008; López-Yáñez et al., 2014; May, Huff, & Goldring, 2012). But most noteworthy of all is the use of secondary analyses of international or national macro-evaluations, such as the *Progress in International Reading Literacy Study* (PIRLS) (Lee & Hallinger, 2012), the *Trends in International Mathematics and Science Study* (TIMSS) (Mullis, Martin & Foy, 2008), both by IEA, the project *Indicators of Education Systems* (INES) by the OECD (Murillo & Barrio, 1999), and the Second Regional Comparative and Explanatory Study (SERCE) conducted by UNESCO (Murillo & Román, 2013).

This line established as one of its primary objectives to ascertain the percentages of time allocated by principals and head teachers to each task (Gordon, 1996; Walker, 2009). The idea that can be gathered, independently of level or country, is that they dedicate their time chiefly to administrative and bureaucratic tasks and commit very little to public relations and teaching.

To look at concrete figures, in the United States, Buttram, Mead, Loftus and Wilson (2008) found that 63.7% of principals' time is allotted to tasks related to administrative issues, while 14% of their time is spent on activities directly linked to teaching such as planning, monitoring students and teachers,

and participating in committees and meetings regarding teaching related issues. In the intensive study about the role of successful mid-level leaders in New Zealand, an analysis was conducted of the tasks performed by intermediate managers in schools and their positions within the school structure (Marshall, 2014).

The TIMSS, both in the 2003 survey and that of 2007, included in its contextual questionnaires a question about principals' time allocation from participating countries (Mullis, Martin & Foy, 2008). The results show, once again, that principals' allotted more time to administrative tasks than to those of a purely pedagogical nature (Table 1).

Table 1 - Average time allotment by principals taking part in the TIMSS 2007

Tasks	Primary School 4th year	Primary School 8th year
Administrative Tasks (E.g. Budget, planning, meetings, hiring)	32 (,2)	30 (,2)
Pedagogical Leadership	21 (1,0)	20 (,1)
Supervision and evaluation of teachers and other staff	19 (,1)	22 (,1)
Public relations and fundraising	10 (,1)	11 (,1)
Teaching	11 (,1)	9 (,1)
Other	7 (,1)	8 (,1)

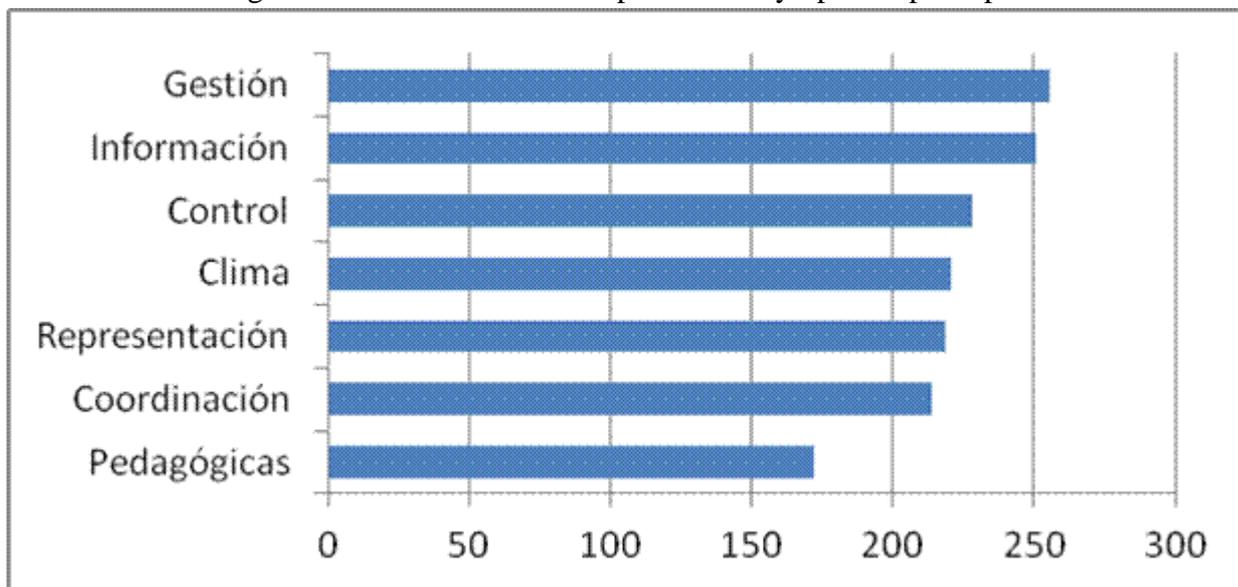
Source: Drawn up by the author from Mullis, Martin, and Foy (2008)

In Latin America two studies are worthy of note: on the one hand, the paper titled *Investigación Iberoamericana sobre Eficacia Escolar*, in which time allocation by the principals at 91 schools in eight countries in the Region (Murillo, 2007) was examined. This work found that the greatest part is allotted to bureaucratic tasks (36.4%), followed by Pedagogical Leadership activities (20.1%); a further 17.3% is dedicated to their professional development, while time spent contacting families totals 16.1%. On the other hand, in the study by Murillo & Román (2003), with data obtained from 2,580 principals in 16 countries in the region, shows in its findings that 16% of principals' time was spent in supervising and counselling teaching staff with a similar amount of time allotted to Pedagogical Leadership practice, 25% of their

time was given to administrative and managerial tasks, a mere 12.2% to public relations, 9.9% to personal development activities and, lastly, 8.5% to raising funds for the school.

In the Spanish context, in the 1990s several studies were carried out along these lines (Antúnez, 1993; Armas, 1998; Gimeno, 1995; Murillo & Barrio, 1999). The measures used in the papers by Armas (1998) or Gimeno (1995) are scales of frequency dedicated to certain tasks, rather than the amount of time spent. Thus, Gimeno (1995) found that the least practiced activities were those of a pedagogical or coordination nature, while those with the highest frequency rates were management tasks, dissemination of information, and control (Figure 1).

Figure 1 - Estimated activities performed by Spanish principals

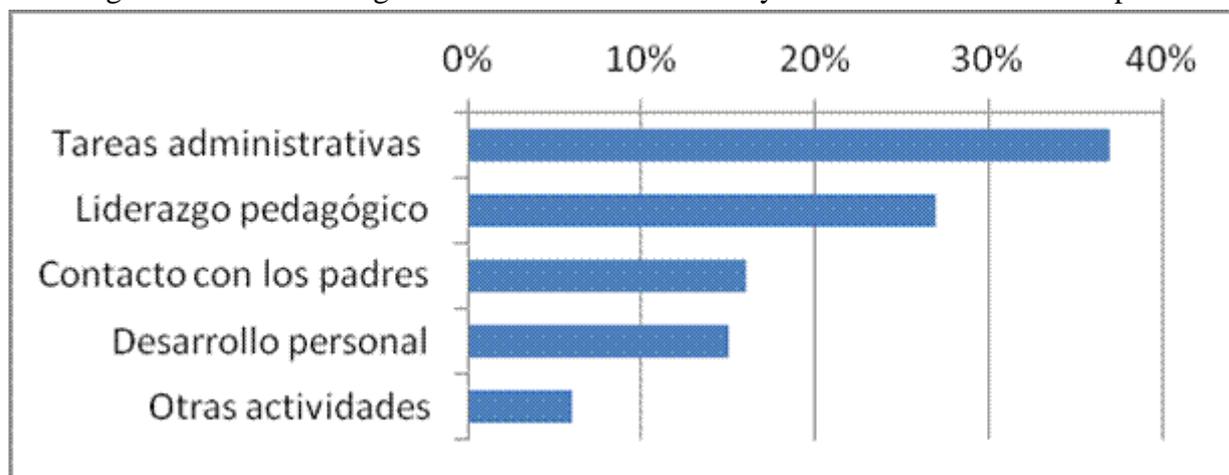


Source: Gimeno (1995: 199)

Perhaps, the most accurate Spanish study to date is the paper by Murillo & Barrio (1999) with data from 437 Primary School head teachers at public, subsidised, and private schools. The mentioned study confirms that the greatest portion of time is allotted to

administrative and planning organisation tasks (36.44%), 26.7% to Pedagogical Leadership tasks, 15.6% to relations with parents, slightly less (14.95%) to personal development, and the smallest portion of time, 6.31%, to other tasks (Figure 2).

Figure 2 - Non-teaching tasks distribution for Primary School head teachers in Spain



Source: Murillo & Barrio (1999: 209)

A second objective in this line of research is to determine the factors related to time allocation. Variables such as gender, directors' age or experience, school size or ownership are examined.

In her doctoral dissertation, Professor Jacqueline Hallet (1985) focused on time

allocation differences in principals based on gender. She found that women dedicate more time to practices directly linked to teaching leadership than men, and less time to administrative tasks. These results were similar to the earlier findings of Burke (1980) and Olsen (1980), and later by Wells (1993)

and Murillo & Barrio (1999). Padilla (2008), in a study of 521 female principals at public schools in Andalusia, observed that the majority accepting this position were middle aged and free of family obligations. These principals claim that the time they dedicate to management tasks in particular, affects their personal time away from the school. And, regarding their tasks, their leadership determined them as predominantly pedagogical. However, in the study by Murillo & Román (2013), no significant gender-based differences among principals were found.

Wells (1993) incorporated other variables in addition to gender, including experience with the position. The data show clearly that more experienced principals dedicate more of their time to pedagogical activities. Murillo & Barrio (1999) found differences in older principals, who allotted more time to administrative tasks and less to fund-raising for the school. These results were similar to those of Murillo & Román (2013).

In a recent study, López-Yáñez et al. (2014) analysed the distribution of tasks from the perspective of collaboration between the management and the members of an educational community using the records reported by the principals. It was observed that more than half of the activities (54%) were performed with participation from other teachers at the school, students, the management and other educational community agents. Only 31% were individual activities. As in other similar works (Spillane, 2005), it appears that the pattern and magnitude of leadership allocation is consistent with the type of activity involved. It was concluded in that study that co-leadership has a greater presence in Secondary Education centres (61.5%) than in Primary Schools (49.4%), probably due to greater autonomy among secondary level teachers.

An additional factor that, in different studies, seems to be related to time allocation among principals is school size. Results suggest that the larger the school, the more time principals dedicate to administrative tasks and the less time to pedagogical affairs (Burke,

1980; Wells, 1993). However, Murillo & Barrio (1999), in their study on Spain, found that the principals who spend the most time on curricular issues are those at medium-sized schools and with little experience with the position. On the contrary, those who dedicate the least time to administrative tasks are those at small subsidised schools and who have limited experience with the position.

A much more interesting aspect is whether principals' time allocation affects student performance. Horng, Klasik & Loeb (2010) found that schools with poor performance levels showed differences regarding their principals' time allocation in comparison with schools with high performance levels. Thus, they discovered a significant and positive relationship between the time allocated to management tasks within the organisation such as staff hiring and resource distribution, and student performance. From another perspective, Thorpe (2014) has also explored the division between leadership and school management and, in this sense, the implications of these in schools, questioning the persistence of separating these two concepts.

The aforementioned *Investigación Iberoamericana sobre Eficacia Escolar* (Murillo, 2007), found that a statistically significant relationship exists between the time allotted by management staff to tasks related to pedagogical leadership and higher student performance at that school.

Lastly, Murillo & Román (2013), with data on 2,580 managers from 16 Latin American countries, carried out a multilevel analysis at three levels on performance in Mathematics and Reading. In the analysis, it was found that the percentage of time spent by principals in pedagogical leadership affected Sixth Grade students' performance in Mathematics and Reading, just as it affected the Third Grade students' performance in Reading, and it is shown more strongly in Mathematics than in Reading skills.

In this research, the objective was to gain deeper knowledge of time allotment among principals of Primary Education centres in

Spain to management tasks, what factors influence such allotment and the impact it has on students' performance. In formal terms, the research aims to:

- Determine the impact of principals' time allotment on students' performance at the school.
- Identify the factors relative to the characteristics of the administration and the school that are associated with principals' time allotment.

Methodology

To reach these objectives, the data in the General Diagnosis (EDG) of Primary Education carried out in 2009 by the National Institute for Educational Assessment (*Instituto Nacional de Evaluación Educativa*), of the Spanish Ministry of Education (*Instituto de Evaluación*, 2010) was subjected to a special analysis. Together with performance tests in four basic skills, a series of questionnaires were used to gather data that not only served to contextualise the performance results obtained, but also gathered information providing deeper insights into the knowledge in schools and among teachers and Spanish Primary Education students.

The *variables* used in the study were of the follow types:

1. Time allocation of principals' working hours: Time percentages allocated to Internal administrative tasks, Curriculum related tasks and teaching, Tasks related to requests from the administration, Tasks related to meetings with teachers or families, and Other tasks.
2. Variables relative to the principal's characteristics and those of the school at which he or she works, in order to determine how the following influence time allocation: School ownership type (public/private); School size (estimated from the number of teachers employed at the centre); ISEC of the school (the school's average social, economic and cultural status statistical index, ISEC), calculated from the responses given by students and their families; this is

expressed as a typified value based on four components: the parents' highest level of studies, the parents' highest professional level, the number of books in the family home and the level of domestic resources; Gender of the principal; Age of the principal; Experience in managerial functions; Qualifications specific to the position; Satisfaction level of the principal in the school.

3. Variables in student performance, all estimated through TRI with a grade on a mean scale of 500 points with a typical deviation of 100, in the following areas: Linguistic communication skills, Mathematical skills, Knowledge and interaction with the Physical environment skills, and Social and civic skills.
4. Adjustment variables: ISEC of the student's family, ISEC of the school, centre ownership type, students' gender and students' pre-school attendance.

The *final* sample used for this research was made up of 874 Primary School principals and 28,708 4th year Primary School students. Sampling was stratified by conglomerates, with constant stratification of 50 centres in each of the Autonomous Communities. Of these, 48.3% were women, with the majority between 50-55 years of age (47.4%), one in three had less than 5 years' experience as principal (34.5%) and 70.1% had received specific training for the position.

Several *instruments* were used in conducting this research. Firstly, four performance tests, one for each of the four skills evaluated: Linguistic communication skills (reliability of 0.861), Mathematical skills (0.800), Knowledge and Interaction with the Physical Environment skills (0.854), and Social and Civic skills (0.856). Secondly, a questionnaire for students and another for their families, from which the ISEC index, was drawn up. And lastly, a questionnaire for the school administrators, from which data were obtained on the school's characteristics, the principal's characteristics and time allotment.

To reach these objectives, a variety of *statistical analyses* were employed. The first of these were descriptive analyses, from which principals' time allocation was estimated; secondly, a linear regression analysis to determine the factors associated with time distribution; and, finally, two-tier Multilevel Models (student and school) to examine the impact of time allotment on students' performance, and a Cluster Analysis to draw up principal and head teacher typologies from the manner in which they distribute their time.

Results

Impact of principals' time allotment on students' performance

The first objective was to determine the impact of principals' time allotment on students' performance. To reach this objective, firstly, three typologies were established on the grounds of how they distributed their time. This was performed by means of a two-stage

cluster analysis. Three principal types were thus obtained, depending on time allotment (Table 2):

- Principal type A, predominantly dedicated to internal administrative tasks, dedicates an average of 43% of their total time for managerial functions. This group comprises 234 principals, equivalent to 26.7% of the sample.
- Principal type B, defined by high dedication to curricular tasks and teaching in general at the school, spends an average of 47% of their time on these activities. This group comprises 243 principals, equivalent to 27.7% of the sample.
- Principal type C, dedicating less time to internal administrative and curriculum related tasks, spends more time meeting requirements by the administrations and to meetings. Of all principals, 399 in the sample fall under this type (45.5%).

Table 2- Principals typologies: Centres in the final clusters resulting from the analysis of the cluster analysis

Tasks	Principal type A	Principal type B	Principal type C
Internal Administrative Tasks	43	18	22
Tasks relative to the curriculum and teaching	24	47	22
Tasks relative to requests from the Administrations	14	12	22
Tasks relative to meetings with the teaching staff, families, etc.	16	19	28
<i>Number of cases</i>	<i>234</i>	<i>243</i>	<i>399</i>

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010)

The second step was to ascertain whether students at schools with principals of one or another type attain different academic results in the four variables studied: Linguistic skills, Mathematical skills, Science skills, and Social and Civic skills. To this end, and in view of the fact that students' performance and manager type belong to different units of analysis, two-tier multilevel models (student and school) were used.

The results of the four multilevel model processes are shown in Tables 2 to 5. From

these, a number of theories can be drawn. The first is that both the student and school ISEC (Socioeconomic and cultural index) appear in the four final adjusted models. This indicates that they are related to performance, and that they fulfil their adjustment function perfectly. In addition, and though not among the aims of this study, it can be observed that for each typical deviation increasing the students' ISEC (socioeconomic and cultural index), their performance rises an average of 24 points (depending on the subject). The second

variable in the models is school ownership type. According to these data, students at private schools, where ISEC is controlled, perform worse than at public schools, except in Social and Civic skills where no difference was seen. The most important aspect is that this fulfils its adjustment function, and its incorporation controls any possible interference in the model. Student gender and pre-school attendance, however, against expectations, do not contribute significantly to any of the four models.

Focusing on the set aims in this research, the final models yield highly interesting data. For all four product variables, the data shows that the coefficient for the variable "belonging to the principal type B group" renders a significant contribution in three of the four models. This implies that students whose

principals belong to the B group, those allotting more time to curricular issues, obtain better results than those whose principals focus on other activities (controlling the effect of the students' families' ISEC, of the school ISEC and the ownership type of the school).

In more concrete terms, students whose principals are fundamentally dedicated to curricular issues obtain:

- 4.69 points higher in Linguistic Skills (Table 2);
- 5.15 points higher in Mathematical Skills (Table 3); and
- 6.66 points higher in Science Skills (Table 4).

However, as mentioned, this does seem to impact Social and Civic Skills (Table 3).

Table 3 - Results from the multilevel models for Linguistic Skills

	Null model	Adjusted model	Final model
	B (ee)	B (ee)	B (ee)
<i>Fixed part</i>			
Intercept	500.44 (1.40)	503.59 (1.32)	502.59 (1.14)
ISEC		25.91 (.65)	25.91 (.65)
IISEC-School		30.71 (2.41)	31.02 (2.41)
Gender		NS	NS
Pre-School attendance		NS	NS
Ownership type (public or private)		-5.57 (2.47)	-5.64 (2.47)
<i>Process variables</i>			
Principal type A: centred on internal administrative tasks			NS
Principal type B: centred on curricular affairs			4.69 (2.32)
Principal type C: centred on meetings and Administration requirements			NS
<i>Random part</i>			
Among schools	1411.33 (82.64)	605.51 (43.02)	602.62 (43.02)
Among students	8352.81 (73.38)	7,864.81 (69.65)	7,864.41 (69.56)

Note: NS Significant contribution with $\alpha=0.05$.

Source: Drawn up by the author.

Table 4 - Results from the multilevel models for Mathematical Skills

	Null model	Adjusted model	Final model
	B (ee)	B (ee)	B (ee)
<i>Fixed part</i>			
Intercept	500.58 (1.39)	503.54 (1.35)	502.63 (1.44)
ISEC		23.82 (0.65)	23.81 (0.65)
IISEC-School		29.48 (2.46)	30.97 (2.46)
Gender		NS	-
Pre-School attendance		NS	-
Ownership type (public or private)		-5.65 (2.63)	-5.68 (2.63)
<i>Process variables</i>			
Principal type A: centred on internal administrative tasks			NS
Principal type B: centred on curricular affairs			-5.14 (2.36)
Principal type C: centred on meetings and Administration requirements			NS
<i>Random part</i>			
Among schools	1,346.51 (80.30)	631.54 (44.77)	628.00 (44.75)
Among students	8,549.73 (75.12)	8,125.27 (71.96)	8,124.85 (71.96)

Note: NS Significant contribution with $\alpha=0.05$.

Source: Drawn up by the author.

Table 5 - Results from the multilevel models for Science Skills

	Null model	Adjusted model	Final model
	B (ee)	B (ee)	B (ee)
<i>Fixed part</i>			
Intercept	500.49 (1.53)	504.33 (1.67)	504.32 (1.79)
ISEC		25.04 (0.63)	25.04 (0.63)
IISEC-School		24.93 (2.99)	25.36 (2.98)
Gender		NS	-
Pre-School attendance		NS	-
Ownership type (public or private)		-6.70 (3.23)	-7.73 (3.24)
<i>Process variables</i>			
Principal type A: centred on internal administrative tasks			NS
Principal type B: centred on curricular affairs			6.66 (2.92)
Principal type C: centred on meetings and Administration requirements			NS*
<i>Random part</i>			
Among schools	1,769.38 (99.00)	1,149.13 (69.07)	1,141.75 (68.9)
Among students	7,965.36 (70.03)	7,505.24 (66.50)	7,505.07 (66.4)

Note: (*) significant contribution entered manually in the model with the adjustment variables, with a value of -6.94 (2.58).

NS Significant contribution with $\alpha=0.05$.

Source: Drawn up by the author.

Table 6 - Results from the multilevel models for Social and Civic Skills

	Null model	Adjusted model	Final model
	B (ee)	B (ee)	B (ee)
<i>Fixed part</i>			
Intercept	500.54 (1.42)	501.63 (1.16)	501.63 (1.16)
ISEC		23.19 (0.64)	23.19 (0.64)
IISEC-School		23.22 (2.34)	23.22 (2.34)
Gender		NS	-
Pre-School attendance		NS	-
Ownership type (public or private)		NS	-
<i>Process variables</i>			
Principal type A: centred on internal administrative tasks			NS
Principal type B: centred on curricular affairs			NS
Principal type C: centred on meetings and Administration requirements			NS
<i>Random part</i>			
Among schools	1,467 (84.83)	888.46 (56.91)	888.46 (56.91)
Among students	8,312.95 (73.12)	7,921.13 (70.27)	7,921.13 (70.2)

Note: NS Significant contribution with $\alpha=0.05$.

Source: Drawn up by the author.

Factors associated to time allotment by principals

Having established the importance of time allotment by principals at Primary Schools in Spain to students' performance, the second objective in this study was to determine which factors are associated with time allotment by the mentioned principals. Eight variables are studied of two different types: characteristics of the schools and those of the principals. School characteristics are: ownership (public-private), size, socioeconomic and cultural level of the students' families; and the characteristics studied for principals are: gender, age, experience in managerial tasks and satisfaction with the school.

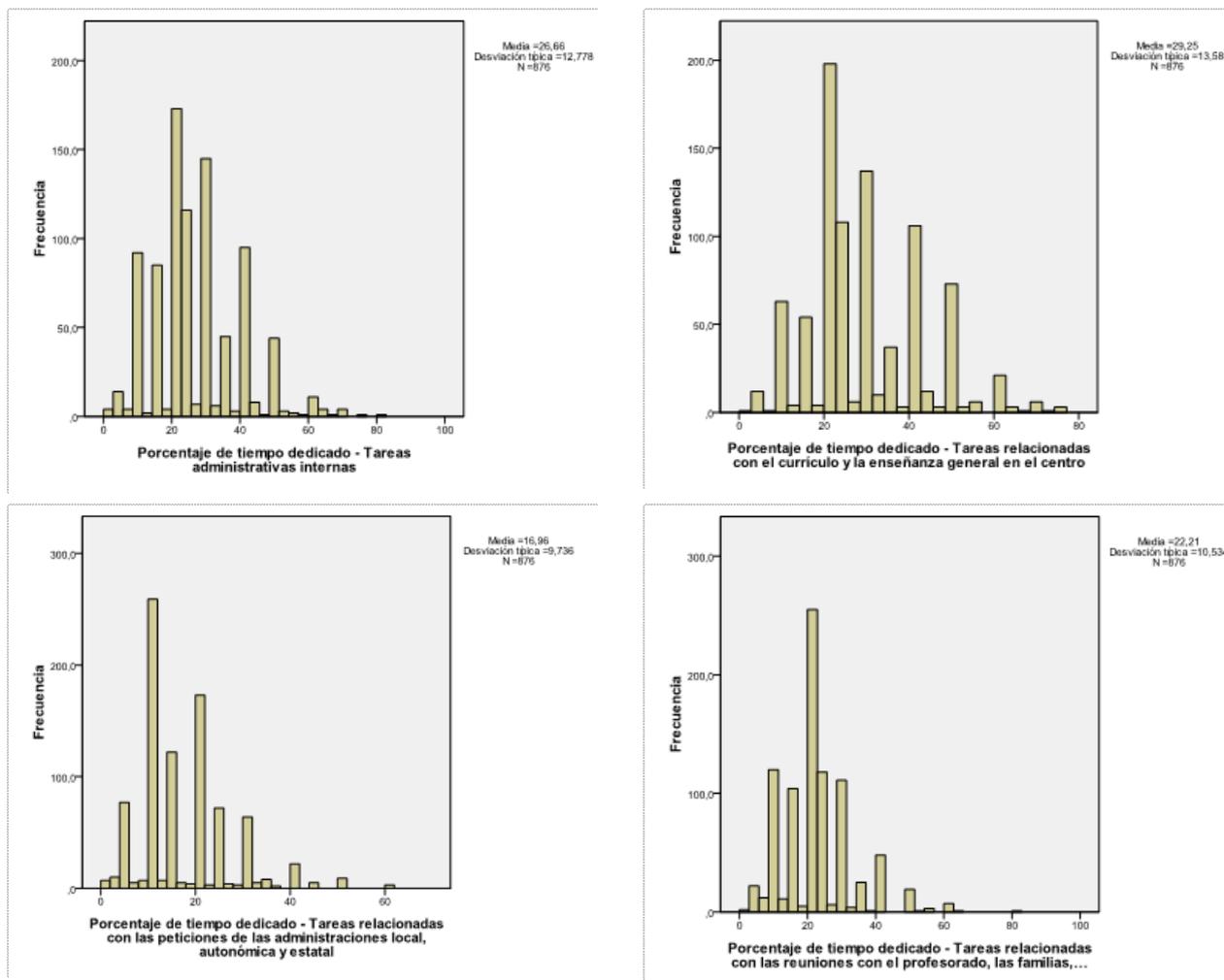
We observed, firstly, how principals viewed their own time allotment (Figure 3):

- Internal Administrative Tasks: 26.66% of their time.

- Tasks relative to the curriculum and general teaching activities at the school: 29.25%.
- Tasks relative to requests from the Local, Autonomous and Central Administrations: 19.96%.
- Tasks relative to meetings with the teaching staff or families: 22.21% of their time.
- Other tasks: 4.92% of their time.

In this manner, Spanish principals at Primary Schools, in a hypothetical 8-hour working day during which they are free from teaching duties, dedicate 3 hours and 43 minutes to tasks of an administrative nature, 2 hours and 20 minutes for curriculum related tasks, 1 hour and 46 minutes to meetings and the remaining 23 minutes to other activities.

Figure 3 - Time allocation by principals at Primary Schools in Spain



Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010)

It is worth noting the wide differences in time allocation to each of these tasks among the principals consulted. Beyond normal rates of variability in each principal's work, it would

not seem unreasonable to suppose that some principals have made exaggerations in their answers (Table 7).

Table 7 - Time allocation by principals as a function of the percentage of their time dedicated to each task

Tasks	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-
Internal Administrative Tasks	12.62	29.00	31.72	17.14	6.19	2.13	.97	.22
Tasks relative to the curriculum and teaching	8.33	29.32	29.34	17.73	10.41	3.30	1.11	.46
Tasks relative to requests from the Administrations	40.94	36.29	16.63	4.30	1.50	.33	.00	.00
Tasks relative to meetings	17.12	42.84	27.55	8.96	2.07	1.08	.28	.10
Other tasks	90.54	7.16	1.09	.67	.43	.11	.00	.00

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (INEE, 2011)

To determine which factors are associated to time allotment by principals, eight variables of two different types are studied, namely the

characteristics of the centre and of the principal. School characteristics are: ownership (public-private), size,

socioeconomic and cultural level of the students' families; and the characteristics studied for principals are: gender, age, experience in managerial tasks and satisfaction with the school. Of these, five are shown to be related with some aspect of time allotment: school ownership type and size; and the gender, age and specific qualifications of the principal.

The results of the linear regression analyses, one for each aspect of time allocation (Table 8), show that:

- Principals of private schools dedicate 5.7 percentage points less of their time to administrative tasks, 7.18 more to curricular and teaching tasks, 2 less to tasks involving requests from the administrations; 1.7 more

to tasks relative to meetings with teachers or parents.

- Principals at larger schools dedicate less time to curricular tasks and more to meetings.
- Female principals dedicate a smaller percentage of their time to internal administrative tasks and more time to meetings with teachers and parents.
- Older principals invest a larger percentage of their time to curriculum related tasks.
- Principals who have received specific management training dedicate more time to tasks involving meeting with parents and students.

Table 8 - Factors associated with time allocation among principals of Spanish Primary Education schools. Results of the Linear Regression Analyses

VD	VI	B	E.E.	T	Sig.
Internal Administrative Tasks ^a	Intercept	30.365	.654	46.419	.000
	School (Public/Private)	-5.765	.945	-6.102	.000
	Gender of the principal (male/female)	-3.918	.868	-4.512	.000
Tasks relative to the curriculum and teaching ^b	Intercept	27.469	2.131	12.888	.000
	School size	-.176	.023	-7.743	.000
	School (Public/Private)	7.182	1.111	6.462	.000
	Age of the principal	1.756	.542	3.242	.001
Tasks relative to requests from the Administrations ^c	Intercept	17.076	.514	33.193	.000
	School (Public/Private)	-2.058	.743	-2.770	.006
	Gender of the principal (male/female)	1.374	.683	2.013	.044
Tasks relative to the teaching staff, families, etc. ^d	Intercept	12.4976	1.180	10.588	.000
	School size	.120	.018	6.822	.000
	Gender of the principal (male/female)	3.350	.702	4.771	.000
	Principals' qualifications	1.799	.766	2.350	.019
	School (Public/Private)	1.850	.804	2.302	.022

(a) Variables excluded from the model: ISEC-School, School size, Age of the principal, Experience in managerial tasks, Principals' qualifications, Satisfaction of the Principal.

(b) Variables excluded from the model: ISEC-School, Gender of the principal, Experience in managerial tasks, Principals' qualifications, Satisfaction of the Principal.

(c) Variables excluded from the model: ISEC-School, School size, Age of the principal, Experience in managerial tasks, Principals' qualifications, Satisfaction of the principal.

(d) Variables excluded from the model: ISEC-School, Age of the principal, Experience in managerial tasks, Principals' qualifications, Satisfaction of the principal.

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010).

Let us examine these results, analysing principals' time allotment in terms of the mentioned five explanatory variables.

The *ownership type of a school*, as we have seen, affects its principals' time allotment. In effect, the data indicate that principals at

public schools dedicate more of their time to administrative tasks, internal and relative to requests from the Administrations, and less time to meeting with teachers and parents, and tasks related to the curriculum and teaching (Table 9).

Table 9- Distribution of principals' time at Spanish Primary Schools depending on the school's ownership type

Tasks	Public school	Private subsidised school	Private non subsidised school
Internal Administrative Tasks	28.51	22.38	22.73
Tasks relative to the curriculum and teaching	28.19	31.63	32.27
Tasks relative to requests from the Administrations	17.61	15.73	11.36
Tasks relative to meetings	20.82	25.13	31.36
Other tasks	4.87	5.13	2.27

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010)

Similarly, *school size* seems to impact principals' time allotment (regardless of the school ownership type). Therefore, the larger the school, the less time spent by principals in curriculum and teaching related issues, and the more time invested in meetings with teachers and parents.

This relation can be observed in Table 10, in which the schools have been grouped in three blocks based on size: small, with less than 29 teachers; medium, with 29 to 42 teachers; and

large, with over 42 teachers. The cut-off points are at the percentile points 33 and 66, so that the number of schools in each group is similar, and close to 300. While the time allotted to administrative tasks remains fairly constant, in smaller schools principals dedicate more time to curriculum issues and less to meetings. At larger schools, by contrast, the great proportion of time dedicated to meetings is offset by the scarce time spent on curricular and general teaching issues in the organisation.

Table 10 - Distribution of principals' time at Spanish Primary Schools depending on the school's size

Tasks	Small (less than 29 teachers)	Medium (between 29 and 42 teachers)	Large (more than 42 teachers)
Internal Administrative Tasks	26.44	28.60	25.11
Tasks relative to the curriculum and teaching	33.66	27.36	26.21
Tasks relative to requests from the Administrations	16.40	17.76	17.06
Tasks relative to meetings with the teaching staff, families, etc.	19.16	21.56	26.21
Other tasks	4.33	4.73	5.41

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010)

The Linear Regression Analyses shown earlier indicate that, controlling other

variables, principals distribute their time based on their gender. According to the data (Table

11), women dedicate less time to administrative issues, 41.8% as opposed to 45.23% in the case of men, especially internal administrative tasks, and more time to

meetings with teachers. This, which is in agreement with other research, shows that there are managerial style differences between men and women.

Table 11 - Distribution of principals' time at Spanish Primary Schools depending on gender

Tasks	Men	Women
Internal Administrative Tasks	28.83	24.33
Tasks relative to the curriculum and teaching	28.80	29.71
Tasks relative to requests from the Administrations	16.44	17.56
Tasks relative to meetings with the teaching staff, families	20.64	23.90
Other tasks	5.30	4.50

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010)

Another factor that has proved to impact time allocation is the age of the principal. The variable "Experience in managerial functions" is also related to time allocation, in particular in the correlation between the percentage of time dedicated to curricular issues and the experience as principal is statistically significant to $\alpha=0.05$ (0.08). However, in conjunction with age, this variable explains more fully the differences observed.

According to this data, older principals dedicate more time to curriculum related tasks, and consequently, less time to other activities (Table 12). Therefore, a principal of less than 30 years of age dedicates 22.0% of his or her time to curriculum related tasks and 52.0% to tasks related to administration, while in those over 60 these percentages differ considerably, at 21.4% and 42.1% respectively. Age, therefore, strikes major differences in management style.

Table 12- Distribution of principals' time at Spanish Primary Schools depending on their age

Tasks	Less than 30 years	30-39 years	40-49 years	50-59 years	60 or over
Internal Administrative Tasks	30.00	27.07	27.21	26.35	25.22
Tasks relative to the curriculum and teaching	22.00	27.35	27.87	30.29	31.40
Tasks relative to requests from the Administrations	22.00	17.04	17.09	16.88	16.90
Tasks relative to meetings with the teaching staff, families, etc.	20.00	22.65	22.88	21.51	23.35
Other tasks	6.00	5.89	4.95	4.99	3.13

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (Instituto de Evaluación, 2010)

The final factor, according to this data, affecting principals' time allocation involves whether or not they have received training for managerial posts. Let us remember that 70.1% of principals stated that they had received such

training. The data shows that this has a significant impact only on the time dedicated to tasks relating meetings with teachers and parents. Principals who have received training dedicate more time to these tasks (Table 13).

Table 13 - Time allotment by principals at Spanish Primary Schools, depending on whether they received managerial training

Tasks	Non qualified	Qualified
Internal Administrative Tasks	27.06	26.49
Tasks relative to the curriculum and teaching	30.24	28.85
Tasks relative to requests from the Administrations	16.79	17.04
Tasks relative to the teaching staff, families, etc.	21.08	22.68
Other tasks	4.84	4.94

Source: Drawn up by the author with data from the General Diagnostic Evaluation of Primary Education for 2009 (INEE, 2011)

Discussion and conclusions

This research falls within the framework of the fertile line of research that seeks to gain in-depth knowledge of time allocation by school principals and its impact on their school. The results have the potential of having been obtained from a wide sample of male and female principals, and therefore representative for the whole of Spain, which assures their reliability.

To meet each of its three goals, the research offers firstly, clear data on time allocation by principals at Primary Schools. Overall, the results show that principals dedicate a greater part of their time to administrative tasks of all types (46%), another 29% to pedagogical and curricular tasks, and 22% to meetings.

The only prior study of similar characteristics conducted on Spanish principals was completed 15 years ago (Murillo & Barrio, 1999). In their findings, principals were also seen to dedicate a large part of their time to bureaucratic tasks (in this case, 36.4% of their time) and less time to tasks of a curricular nature (26.7%). Given the differences in the tasks considered, it is impossible to deduce whether such differences are due to changes that have taken place over the last 15 years. Therefore, attempting to draw conclusions on the processes is rather complex. In the study by TIMSS it was found that 32% of time was spent on administrative tasks, which bears a similarity with the data in this study, but only with regard to internal administrative tasks.

With special data mining techniques we also found that gender and age affect principals' time allocation. Thus, female principals and older principals dedicate a smaller percentage of time to administrative activities, and consequently more time to tasks related with the curriculum and teaching, and to meetings with teachers and families. These results are in agreement with other studies (e.g. Murillo & Barrio, 1999; Murillo & Román, 2013), and show that men and women, and older and younger principals, have different school leadership styles.

In response to the third aim, the most significant from an applied viewpoint, the research has found evidence that will help to make better principals. The principals whose students learn, are those who dedicate time to curricular issues. This finding matches those of Murillo & Barrio (1999), using the same methods, and of Murillo & Román (2013). The meta-analysis conducted by Robinson, Lloyd, and Rowe (2008) with studies on the relationships between school leadership and student performance reached the same conclusion: principals who practice a pedagogical style have a positive impact on their students' performance.

Combining these three aims gives rise to interesting conclusions. On the one hand, the best principals are women, older, and those having received specific training for the post. They are better because they dedicate more time to pedagogical tasks and less time to administrative tasks. On the other hand, better management is found at smaller school and privately owned schools where principals are

allowed to concentrate more on tasks of a pedagogical nature.

This study benefits from the potential gained by handling a large amount of data obtained through statistically significant sampling representing the entire nation; thanks to this, its capacity for generalisation is attested. Nevertheless, it shares with other studies the limitation stemming from the fact that the time allocation data consists of the principals' own opinions, rather than real time distribution. For this study in particular, a further limitation is the fact that the time allocation categories are different to those used in other works. It would be useful if the Assessment Institute (*Instituto de Evaluación*) should maintain these questions in future evaluations, and include them in its Diagnostic Assessment of Secondary Education. In this way, an interesting record of the evolution of these data in Spain would be obtained.

The practical applications of this study are immediate. A clear message can be given, on the one hand, to principals stating that the portion of their time that brings about improvement in learning is that spent in pedagogical issues. If a principal needs to delegate any tasks, they should be administrative tasks.

And, on the other hand, to the Administrations: the data show clearly that principals dedicate too much time to administrative tasks, both internal and external, and this, to a large extent, is due to the demands exacted by the administrations. Helping principals to spend time in pedagogical concerns will contribute to raising quality in education.

This research has demonstrated that principals' work has an impact on student learning. To ensure that principals concentrate on "what is important", on pedagogical issues, is a strategy for improving quality in education. If we want good principals, we need pedagogical leaders, not administrators.

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Note

This study was conducted from a secondary analysis of Open Access databases:

- <http://www.mecd.gob.es/dctm/evaluacion/bases-de-datos/egd09.zip?documentId=0901e72b813c8ea6>
- <http://www.mecd.gob.es/inee/Bases-de-datos.html>

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