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Organization Constraints on Professional Development: An Exploration into How Institutional Frameworks Hold Back Teacher Training

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Abstract

SDG 4.c calls for increasing the supply of qualified teachers while many countries face teacher shortages. Using TALIS 2018 data, this article argues that the problem is two-fold: increasing the number of qualified professionals entering the education system and expanding training opportunities for current teachers. We focus on the second issue in Latin American countries to explore how institutional arrangements, including teachers' workload, lack of paid out-of-class work hours, poor incentives for professional development and overall working conditions, could be barriers against the continuous development of current teachers that the international cooperation should take into account. Without institutional reforms, SDG 4.c goal will not be met.

Introduction

The Sustainable Development Goals (SDGs) set an agenda to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UNESCO, 2015). In order to achieve this goal, the agenda sets seven targets (4.1 to 4.7) and three means of implementation (4.a to 4.c). The third mean of implementation is:

> *by 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States* (UNESCO, 2015, p. 17).

Within this agenda, this special issue focuses on the first-of-its-kind target on teachers in the history of educational development goals. Through this article, we argue that in order to achieve this goal it is necessary to address institutional arrangements that may hinder the professional development of active teachers.

Increasing the supply of qualified teachers is a challenge across education systems (Ávalos & Valenzuela, 2016; OECD, 2005). Teacher shortages appear when the demand for teachers is greater than their supply of labor. International cooperation agencies have made efforts to describe this challenge and to address it. According to UNESCO (2020), the "supply of well-trained, supported and qualified teachers" is one of its top priorities.

According to OECD (2005), the teacher quantity and teacher quality issues are intertwined. When education systems face an excess in demand for teachers, they respond by lowering entry requirements, assigning teachers to classes for which they are not specialized; or by increasing class sizes. These short-term responses may affect the quality of the education service (Schleicher, 2012). For example, lowering entry requirements may result in higher turnover rates for low-qualification teachers (Redding & Smith, 2016) and higher teacher turnover rates have been found to have a negative impact on student achievement (Ronfeldt, Lankford, Loeb, & Wyckoff, 2011).

According to the Inter-American Development Bank, an international cooperation agency with a focus in the Latin American region, an effective way to strengthen quality and social prestige in the teaching profession is improving initial teacher training by raising entry requirements to these programs, offering economic incentives for talented candidates and certificate teacher training institutes (Elacqua, Hincapié, Vegas, & Alfonso, 2018). Continuous teacher training is also considered key for improving education quality (Hincapié, Rodriguez, & Cruz-Aguayo, 2020). Other agencies such as UNESCO, *Organización de Estados Iberoamericanos*, the World Bank, CIDA and USAID also studied, promoted or implemented programs in developing countries so that educators could upgrade their credentials while teaching (Luschei & Chudgar, 2015; Organización de Estados Iberoamericanos, 2013; UNESCO, 2014; World Bank, 2017).

Addressing teacher shortages represents a two-fold problem. First, there is a challenge in improving the supply of qualified prospective instructors (Jackson, 2012). Without

highly qualified new teachers, SDG 4 will not be met. Every year, a relatively small share of the teacher corps is "renewed" as a group of educators retire and another enters the profession after graduating from initial teacher training. Most of the teachers in a given year are "stayers" (Sutcher, Darling-Hammond, & Carver-Thomas, 2019). Initial training is the means to reducing this aspect of teacher shortage (Sutcher et al., 2019). Second, there is a need for Continuous Professional Development (CPD) of in-service educators, which represent the bulk of the teachers labor force. This article focuses on this second issue.

Based on the Teaching and Learning International Survey (TALIS) data, we explore indicators on how institutional arrangements including workload, lack of paid out-of-class work hours, poor incentives for professional development and overall working conditions might constitute barriers against the access and participation in CPD of current teachers that the international cooperation should take into account. Though we recognize CPD quality is also an issue, we focus on a preceding problem: structural arrangements may hinder teachers' access to CPD regardless of its quality. Without in-depth institutional reforms, SDG 4.c goal will not be met in some countries. Furthermore, we argue that teachers' questionnaires in existing international surveys, such as TALIS, PISA, TIMSS and PIRLS, impede proper diagnostics and cross-country comparisons regarding how institutional arrangements may constitute barriers against access to CPD. Simply put, current surveys do not differentiate between paid and unpaid teaching-related activities and, as a result, overlook some of the largest constraints placed on educators: non-instruction teaching related activities that are often not accounted for in contracts as in-school work time.

Literature Review

A teacher shortage occurs when the demand for teachers exceeds the supply for teachers (Dolton, Tremayne, & Chung, 2003; Guarino, Santibañez, & Daley, 2006). This can occur both from a quantitative point of view and from a qualitative point of view (Razquin, 2019). In the first case, there is a scarcity of teachers, represented by the unfilled teaching positions. Santiago (2002) refers to this situation as *vacancy rates*. Even though this measurement is attractive because of its simplicity, it is usually not reliable: first, because positions are filled with substitutes, temporary staff teachers with lower certifications, thus lowering quality. Second, because in some cases a position is not created until schools know there are professionals with skills and abilities to work. In the second case, the measurement refers to the number of unqualified instructors working in schools (Dolton et al., 2003; Ingersoll, 2003). Santiago (2002) refers to this as a *hidden shortage* as sometimes forces to lower standards to fill the positions.

In developing countries, shortages are unequally distributed. Qualified teachers disproportionally serve privileged children. This challenge reproduces inequalities as marginalized children do not have access to prepared instructors (Akiba, LeTendre, & Scribner, 2007; Ávalos, 2011; Luschei & Chudgar, 2015, 2017; Razquin, 2019; Schleicher,

2012). This differentiated access to qualified educators has been found to translate into academic achievement gaps (Akiba & Liang, 2014; Rivkin, Hanushek, & Kain, 2005).

There is consensus on the importance of initial training to address the shortages in teacher quality. However, waiting for a new generation of professionals will not result in an improvement of education quality for children and youngsters currently enrolled in school. The present situation requires offering quality professional development to in-service teachers to address hidden shortages. No matter how good initial training is, new challenges in the school system such as teaching in multicultural classrooms, use of information and communication technologies, parent involvement planning and evaluation activities require CPD (Darling-Hammond, 2009, 2017; Schleicher, 2012).

In most European education systems, schools play a key role when deciding the needs for teachers' professional development. There are 37 countries where a CPD plan at the school level is mandatory. Schools are usually not alone in this decision. The local authorities and the top-level authorities are also responsible for the definition of CPD (this varies by country) (Eurydyce, 2018). In 14 countries, participating in CPD is mandatory for career promotion and in 3 of them is required to maintain a certain compensation level. In education systems with a flat-career structure, this training is required or considered to improve compensation.

In order to promote CPD, countries implement different policies. All countries provide free courses or offer funding for schools so that teachers can be trained. Some are organized at the national level, others at a local level; sometimes the ministry of education responsible for training while in other cases courses are offered by universities or private companies. In 36 European countries, teachers are allowed to participate in CPD activities during working hours. Some of the conditions are having the school principal's consent, participating in CPD for a limited time or when they do not have teaching obligations. Other measures to promote CPD are reduced travel costs, funding for accommodation and the learning material (Eurydyce, 2018).

In Latin America, there are different arrangements regarding the management of schools, which in turn affects the opportunities and incentives for CPD. Among TALIS participants, Argentina, Brazil and Mexico are federal countries, where school administration is largely concentrated at the provincial level. In Chile and Colombia, this responsibility lies with local governments. Legislation regarding the teaching career is set at the national level in Chile, while in Argentina it is set at the provincial level (Vegas & Navarro, 2002). However, hiring and firing teachers in Argentina is a provincial responsibility, while in Chile it is a local responsibility. Stanton (2019) has analyzed different aspects of the teaching career in 14 Latin American countries. In order to enter initial teacher training, 9 out of 14 countries require a knowledge test (Brazil, Chile, Colombia and Mexico among the TALIS participants). Moreover, four countries (including TALIS participants Chile and Mexico) also ask for a minimum performance in secondary education. Once teachers have started their professional careers, paths to promotion present shared patterns and differences. All countries require seniority for promotion. Ten

countries also ask for certification (Brazil, Colombia, Mexico among TALIS participants) and six countries ask for a good prior performance (Chile, Colombia and Mexico among TALIS participants). In Argentina, Guatemala and Uruguay, seniority is the main requirement (Stanton, 2019).

Regarding CPD, the author shows that in nine countries in-service training is aligned to teachers' needs (Argentina, Chile, Colombia among TALIS participants). In six countries, the least effective teachers are supported by the school leaders to improve their practices (Chile, Colombia and Mexico among TALIS participants) (Stanton, 2019). The main mechanism to obtain a promotion in the teaching careers is through obtaining "certification points" via continuous training and seniority. CPD, therefore, is not usually considered a means to acquire better practices but as an instrument to accumulate points needed for promotion (Morduchowicz, 2002). In Latin America, CPD programs lack articulation and they usually take place outside of the work-time, both as in-person courses and as distance-learning courses (Vezub, 2013). Teachers have limited time for CPD programs because their time is also needed for other school activities outside their paid time.

Conceptual Framework

A scarcity of qualified teachers has been identified in Latin American countries (Luschei & Chudgar, 2017; Mehrotra & Buckland, 2001; Razquin, 2019; Santibañez, 2016). Analysts agree on the importance of improving both initial training and CPD (Elacqua et al., 2018; Luschei & Chudgar, 2017; Vaillant, 2006; Vezub, 2007). For international cooperation agencies and governments, this raises challenges closely related to the institutional framework of the teaching career and working conditions.

Our conceptual framework is based on the organizational analysis of the school system drawn from the sociology of organizations (Hoyle, 1965; Bell, 1980; Ingersoll, 2001). This theoretical approach has begun studying the Weberian concepts of *authority* and *bureaucracy* in the school system and later developed to focus on different topics such as educational leadership, educational administration, and teacher policies. Regarding teachers, this field studies the institutional framework of school systems, which include, but are not limited to, the formal mechanisms for hiring teachers, duration of contracts, activities covered by contracts (i.e. teaching hours and in-school out-of-class work hours) and incentives that influence choices on career paths (Ingersoll, 2001).

The institutional framework is a highly relevant topic of education policy analysis that is currently understudied and often overlooked in comparative education research (Gumus, 2013). The extent to which teacher contracts include formal work hours for non-teaching activities is closely related to the amount of essential yet informal work hours teachers undertake during their unpaid leisure time. Inasmuch as leisure time is often the only means for further professional development, the amount of out-of-school teaching related responsibilities, together with incentives in favor of higher qualifications, affect

individuals' choices regarding continuous formal training. In considering these factors, our work leans on previous organizational research in the field of education (Giannini, 2015; Hoyle, 1965; Ingersoll, 2001; Opfer & Pedder, 2011). As previous studies (Freeman, O'Malley & Eveleigh, 2014; Gumus, 2013; Liu, Bellibas, & Gumus, 2020; Sims, 2020), we use TALIS data which is described in detail in the following section.

Methods

Data.

For this research, we use TALIS 2018 microdata on all participating countries. TALIS is conducted by the OECD as a part of their Indicators of Education Systems (INES) project. In the latest TALIS cycle held in 2018, 48 countries/economies participated (OECD, 2018b). The survey is directed at teachers and principals, gathering information on the learning and working environment for educators in schools as well as contextual information on factors that may affect student learning. TALIS is designed to provide cross-country comparisons in these domains by collecting data through large representative samples mainly on lower secondary education schools, though some countries opted to expand that coverage to primary and upper secondary education. In this analysis, we only focused on the lower secondary education sample. Data is collected through two separate questionnaires, one directed at principals and another at teachers. Approximately 200 schools per country are sampled, with a target of 20 teacher responses per school, and minimum response rates are set at 75% for schools and 50% for teachers within schools (OECD, 2018a). Samples are stratified to provide representative data both at the group (country/economy) and sub-group levels such as sub-national regions, by population sizes or school administration (public/private).

TALIS datasets classify schools into three groups based on their location's population size: rural (population of up to 3,000), town (population between 3,000 and 100,000) and cities (population of over to 100,000). For comparison purposes, data from all countries was limited to schools located in cities. Thus, the samples for the five Latin American economies that participated in TALIS 2018 are: 117 schools in the City of Buenos Aires in Argentina, 85 in Brazil, 91 in Chile, 72 in Colombia, and 89 in Mexico. Data on school and teacher participation by economy are provided in Table 1 in the following section. As teacher supply, working conditions and professional development opportunities vary greatly between rural and urban environments, focusing our analysis on cities allows for a fairer comparison.

Our analysis is exploratory and descriptive in nature; we do not infer causality from our statistical results. Estimations were done using the *Repest* module in STATA Software as recommended by the TALIS 2018 and TALIS Starting Strong 2018 User Guide (Avvisati & Keslair, 2014; OECD, 2018a). By using the *Repest* package, we ensure that our estimations properly account for final and replicate weights in statistics and variance estimations. *Repest* employs the balanced repeated replication with Fay's adjustment

(OECD, 2018a).

Dependent variable. Attendance to professional development courses is the dependent variable. Based on the original question "During the last 12 months, did you participate in any of the following professional development activities?" (question 22), we estimated the dummy variables "Attendance to courses/seminars in person during the past 12 months" and "Attendance to formal qualification program during the past 12 months", separately for all teachers and for full-time teachers at the participating school.

Independent variables. We present the following independent variables in the analysis: existence of teacher shortages according to the school principals, number of school teachers work at, number of hours worked during the last week and percentage of teachers who report barriers to professional development by type of barrier.

Results

This section summarizes the results based on TALIS microdata for all participating economies. We present data for all countries; analysis is focused on Latin American education systems. The first table shows that according to the responses of school principals, some Latin American education systems are among the countries where teacher shortages are highest. For instance, when one looks at teachers in general education, two out of five countries (Colombia 43.3%; Brazil, 40.1%) are from Latin America. Chile (17.5%) and Mexico (16.3%) are at the middle of the distribution, while Buenos Aires has the lowest teacher shortage in the region according to this indicator (12.7%).

Table 2 shows the share of teachers working in one, two, three and four schools and the average number of hours worked at the reporting school, for cities with populations greater than 100,000. Working in multiple schools is a reality in several education systems. In the City of Buenos Aires, more than a quarter of educators (27.6%) work in two or more schools. Brazil follows with 24.5%. While Mexico shows about half of that share (13.4%), it is also among the five economies with the largest share of instructors working in two schools or more. Colombia (4.4%) and Chile (3.8%) show percentages close to Western European countries as Portugal, France and Belgium. City of Buenos Aires, Brazil and Mexico are also the countries with the highest share of teachers working in three or more schools (9.0%; 5.4%; 3.1%; respectively).

Time constraints imposed on teachers, with otherwise equal conditions, who work at more than one school might be a challenge when it comes to participating in school-centered CPD. Furthermore, working in multiple institutions does not help to build a community of practice, an effective work team and a set of values shared by the school staff.

In TALIS 2018, teachers are also asked how many hours they worked in the last week for the participating school. Table 2 shows that the City of Buenos Aires (29.0 hours) and Brazil (30.5 hours) are amongst the five education systems where teachers responded they worked the least amount of hours in the week of reference. In Mexico (34.3

hours), Chile (37.5 hours) and Colombia (40.5 hours), teachers report a higher weekly workload. Results are similar for all teachers and full-time teachers who work at multiple schools. Average amount of work hours increases when focusing on teachers who work

Table 1. Number of responding teachers, schools and percentage of principals reporting shortage general qualification teachers as hindering instruction quality. Year 2018.

Country / Economy	*Teacher Responses*	*Participating Schools*	*Shortage of General Qualification Teachers*
CABA (Arg.)	1,910	117	12.7
U. Arab Emirates	4,915	287	31.9
Australia	2,293	146	12.2
Austria	1,450	83	3.2
Belgium	1,206	71	53.2
Flemish C. (Belg.)	1,037	54	16.5
Brazil	1,171	85	40.1
Alberta (Can.)	717	60	12.4
Chile	1,062	91	17.5
Colombia	1,224	72	43.3
Shanghai (China)	2,932	147	7.2
Cyprus	452	24	12.0
Czech Republic	894	50	24.3
Denmark	344	22	14.0
England (UK)	893	56	36.3
Spain	2,793	149	4.0
Estonia	588	30	19.9
Finland	799	41	(*)
France	458	26	34.1
Georgia	1,028	54	11.1
Croatia	772	42	3.9
Hungary	959	54	29.6
Israel	821	52	31.4
Italy	780	43	39.1
Japan	2,386	127	28.4
Kazakhstan	2,502	124	16.5
Korea	2,258	115	11.8
Lithuania	1,308	67	12.0
Latvia	644	35	37.7
Mexico	1,333	89	16.3
Netherlands	514	32	28.6
Norway	784	28	(*)
New Zealand	1,144	89	29.5
Portugal	524	30	16.0
Romania	1,273	59	27.2
Russian Fed.	1,798	92	15.8
Saudi Arabia	1,826	100	60.1
Singapore	3,252	167	3.8
Slovak Republic	436	21	0.0
Slovenia	226	13	8.8
Sweden	851	58	10.7
Turkey	2,492	102	17.9
Chinese Taipei	1,763	91	1.7
United States	866	55	16.0
Viet Nam	605	32	87.3
South Africa	885	60	13.7

Note: results for cities with a population greater than 100,000. (*) Data not available.
Source: TALIS 2018.

full-time at a single institution. The gap between the average number of hours worked by all teachers and school-exclusive full-time teachers is particularly large for the City of Buenos Aires (from 29 to 37.2 hours) and Mexico (from 34.3 to 42 hours).

Table 2. Percentage of teachers by number of schools worked at and average hours worked at reporting school. Year 2018.

Country / Economy	*Number of Schools Teachers Work At [(i)] (% of teachers)*				*Hours worked at this school*		
	1	*2*	*3*	*4*	*All Teachers*	*Full-time all together*	*Full-time at this school*
CABA (Arg.)	72.4	17.9	5.9	3.1	29.0	29.9	37.2
U. Arab Emirates	95.1	2.3	1.1	0.8	40.2	40.7	40.6
Australia	96.8	0.6	0.2	0.3	45.1	46.9	47.4
Austria	96.1	2.4	0.5	0.3	37.9	40.8	41.5
Belgium	94.2	3.3	0.8	0.3	34.4	35.7	36.4
Flemish C. (Belg.)	96.2	2.7	0.3	0.0	38.3	39.4	39.5
Brazil	75.5	17.4	4.4	1.0	30.5	32.3	36.3
Alberta (Can.)	96.7	1.2	0.2	0.3	46.7	47.1	47.7
Chile	96.2	2.8	0.5	0.1	37.5	39.3	39.8
Colombia	95.6	3.6	0.5	0.1	40.5	42.5	41.4
Shanghai (China)	97.9	1.1	0.3	0.1	45.7	45.9	45.9
Cyprus	95.4	4.0	0.4	0.2	34.2	34.7	35.4
Czech Republic	97.1	2.3	0.3	0.1	37.7	40.2	40.8
Denmark	98.6	0.7	0.4	0.3	38.6	39.6	40.0
England (UK)	94.8	1.3	0.3	0.5	47.0	49.4	50.2
Spain	97.3	1.9	0.2	0.2	36.1	38.0	38.6
Estonia	94.0	3.2	0.6	0.2	37.1	40.0	40.3
Finland	94.8	3.2	0.7	0.7	35.2	36.3	37.2
France	93.8	3.6	0.4	0.0	36.9	38.0	38.8
Georgia	95.0	3.5	0.5	0.2	27.2	28.9	29.1
Croatia	91.5	5.6	2.1	0.3	40.2	40.7	42.7
Hungary	97.4	1.4	0.6	0.1	40.8	41.9	42.4
Israel	89.4	6.1	0.7	0.1	32.7	35.8	35.7
Italy	92.3	6.0	0.7	0.1	30.7	32.2	32.3
Japan	96.9	1.3	0.6	0.8	55.9	59.2	59.5
Kazakhstan	96.6	2.8	0.3	0.2	53.6	55.2	55.0
Korea	96.7	1.2	0.8	1.1	34.4	34.5	34.5
Lithuania	86.9	10.6	1.9	0.4	36.5	39.3	41.4
Latvia	92.7	5.8	1.0	0.2	35.1	38.6	39.9
Mexico	86.6	9.4	2.6	0.5	34.3	38.0	42.0
Netherlands	95.1	2.9	0.0	0.1	35.4	41.2	41.4
Norway	97.9	0.5	0.0	0.0	41.3	43.5	43.6
New Zealand	97.8	0.4	0.0	0.0	46.0	47.5	47.7
Portugal	95.2	3.2	0.6	0.0	38.9	40.3	40.0
Romania	83.4	10.0	4.3	1.7	35.1	35.9	38.2
Russian Fed.	92.8	6.2	0.9	0.1	44.7	28.9	46.0
Saudi Arabia	89.1	3.9	0.6	0.2	29.1	46.1	29.1
Singapore	98.8	0.7	0.2	0.1	45.7	40.4	46.3
Slovak Republic	90.2	8.1	0.4	0.2	38.9	38.8	40.3
Slovenia	98.0	1.9	0.1	0.0	38.7	43.6	39.5
Sweden	95.8	1.5	0.6	0.2	42.3	32.2	43.9
Turkey	96.9	0.8	1.3	0.4	31.6	36.3	32.4
Chinese Taipei	97.8	1.2	0.4	0.2	35.7	45.8	35.9
United States	96.1	1.8	0.3	0.2	45.3	46.3	45.7
Viet Nam	97.8	1.5	0.2	0.2	45.8	37.6	46.9
South Africa	94.2	3.3	1.0	0.9	37.9	(*)	38.1

Note: results for cities with a population greater than 100,000. (i) Results are REPEST estimates and may not add up to 100. (*) Data not available.

Source: TALIS 2018.

Our analysis based on TALIS data in Table 3 also shows the allocation of teaching time as a percentage of all working time. Overall, full-time educators spend a larger proportion of time at instructional activities. Four Latin American economies are amongst the top ten countries where full-time teachers spend a larger portion of their time at instruction: Brazil (77.7%), Chile (75.8%), Colombia (65.5%) and Mexico (64.1%). The City of Buenos Aires is 11th (61.2%). From an organizational point of view, an institutional arrangement where teachers' work is overly centered on instruction limits individuals' options for other teaching related, non-administrative, tasks such as planning, counseling and professional development, which could have a positive impact on education outcomes. For example, including a higher proportion of non-instruction and non-administrative in-school work hours in contracts would enable them to increase time spent in planning, class observation, student tutoring, and even free up leisure time that could reduce a barrier against participation in professional development programs.

Regarding attendance to professional development courses and programs over the previous year, teacher responses from Latin American economies point towards a high, but relatively lower participation in courses. However, as data is self-reported, term definitions are not unequivocal and training programs a largely heterogeneous group, hasty conclusions should be avoided. Full-time teachers from Chile (59.1%), Colombia (60.1%), City of Buenos Aires (60.7%), Mexico (61.8%) and Brazil (71.7%) all report lower course participation rates in the past 12 months compared to the sample average (77.3%). However, Japan (37.9%), France (50.1%) and Belgium (52.3%) report lower attendance levels. Attendance to formal qualification programs is uncorrelated to attendance to in person courses. Participation in formal qualification programs is above average for teachers from Brazil (30.5%), Colombia (28.8%) and the City of Buenos Aires (23.3%). Participation in different types of professional development may be associated with incentives created by institutional frameworks. Further research into created organizational incentives and demand for course offerings is necessary for a deeper understanding.

Another key aspect is the extent to which existing organizational structures might obstruct teachers' professional development. TALIS provides data on some of the main barriers, according to teachers, that prevent them from higher participation in professional development activities. In Colombia and Chile, almost 8 out of 10 teachers agree or highly agree that course prices are a barrier for participating in professional development activities. In Brazil (62.6%) and Mexico (57.6%), the percentages are also relatively high. In the City of Buenos Aires, where the figure is 45.8%, the data is similar to other participating countries.

A second barrier considered is lack of "employer support". Following Portugal, Korea and Saudi Arabia, four Latin American countries report it as a significant obstacle: Mexico (66.4%), Brazil (65.8%), Chile (63.8%) and Colombia (59.5%). The City of Buenos Aires (36.4%) shows a lower percentage. The lack of employer support is an institutional challenge because without its support it is difficult to allocate time or obtain monetary resources to participate in professional development activities.

Table 3. Percentage of time spent at teaching and percentage of teachers who report having attended professional development courses during the past 12 months by employment status. Year 2018.

Country / Economy	*Time spent teaching at school (as percent of total work time)*		*Attended courses in person during past 12 months (% of teachers)*		*Attended formal qualification program during past 12 months (% of teachers)*	
	All	*Full-time* [(i)]	*All*	*Full-time*	*All*	*Full-time*
CABA (Arg.)	44.3	61.2	65.3	60.7	23.7	23.3
U. Arab Emirates	40.7	58.9	85.8	85.7	22.4	22.1
Australia	38.6	44.5	92.4	93.3	12.1	12.6
Austria	44.2	50.9	90.5	91.9	16.9	15.0
Belgium	48.2	55.7	53.3	52.3	15.9	16.2
Flemish C. (Belg.)	44.3	53.6	86.2	88.8	21.8	22.2
Brazil	45.5	77.7	70.7	71.7	29.8	30.5
Alberta (Can.)	49.5	58.8	90.4	90.5	9.8	9.5
Chile	48.5	75.8	55.3	59.1	11.9	11.7
Colombia	39.0	65.5	59.1	60.1	29.5	28.8
Shanghai (China)	(*)	(*)	73.8	73.5	18.5	18.6
Cyprus	38.8	52.2	76.4	77.7	9.7	9.2
Czech Republic	43.8	50.6	82.4	85.0	18.8	17.4
Denmark	49.8	53.2	72.7	72.5	14.8	16.0
England (UK)	39.3	42.8	74.6	79.0	11.4	12.8
Spain	44.8	54.4	74.6	76.9	17.6	16.9
Estonia	48.7	61.0	92.8	93.7	13.9	14.6
Finland	53.6	58.5	74.4	76.4	12.4	12.5
France	44.9	49.2	49.7	50.1	8.1	8.2
Georgia	39.2	72.3	78.4	82.0	14.2	14.6
Croatia	43.2	50.9	88.6	88.4	7.2	6.0
Hungary	45.0	51.4	62.3	62.7	13.7	13.5
Israel	45.0	65.1	81.2	81.7	19.7	18.3
Italy	44.0	55.7	81.7	84.0	13.4	13.8
Japan	30.9	31.2	35.9	37.9	6.7	6.7
Kazakhstan	32.4	35.8	87.9	88.1	32.8	33.2
Korea	38.0	54.0	74.0	74.3	15.0	14.8
Lithuania	44.3	55.6	97.1	97.7	22.7	23.1
Latvia	46.3	60.7	95.2	96.2	22.8	20.3
Mexico	44.4	64.1	57.2	61.8	20.1	21.0
Netherlands	43.1	48.4	90.9	92.9	24.8	24.8
Norway	36.6	38.1	74.2	77.2	21.7	23.2
New Zealand	39.1	44.0	83.5	84.8	11.5	10.9
Portugal	43.1	51.0	71.0	72.6	5.5	5.4
Romania	42.4	49.7	53.3	54.6	47.8	50.2
Russian Fed.	42.6	59.0	87.1	87.5	11.0	10.6
Saudi Arabia	37.0	68.7	74.7	72.4	67.9	66.0
Singapore	31.3	39.1	93.7	94.2	10.6	11.0
Slovak Republic	45.1	52.3	63.7	65.4	9.0	9.3
Slovenia	39.0	52.5	92.6	93.0	11.2	9.7
Sweden	42.2	44.7	72.7	73.7	5.6	5.8
Turkey	56.2	77.3	85.7	86.5	33.4	33.5
Chinese Taipei	33.9	47.9	77.0	77.0	20.3	19.6
United States	39.9	63.8	78.7	78.8	17.5	17.8
Viet Nam	34.6	41.4	74.7	74.3	37.9	35.2
South Africa	42.7	72.2	76.4	76.6	22.0	22.4

Note: results for cities with a population greater than 100,000. (i) Refers to teachers who report working full-time at the school for which the survey was answered. (*) Data not available.

Source: TALIS 2018.

A third barrier is conflict with the work schedule, here coded as "time." In the City of Buenos Aires, three out of four teachers agree or strongly agree that conflict with the work schedule is an obstacle. Chile is also one of the economies with high percentages

(69.3%). Brazil (55.9%), Mexico (55.8%) and Colombia (53.4%) show lower ratios. The limited supply of relevant professional development courses is a fourth barrier. It is a problem in Chile, as reported by 61.9% of teachers and to a lesser extent in Mexico (55.4%) and in the City of Buenos Aires (45.0%). Colombia (41.1%) and Brazil (38.2%) show lower percentages.

The last institutional barrier inquired by the TALIS questionnaire is "Incentives".

Table 4. Percentage of teachers who report barriers to professional development by type of barrier. Year 2018.

Country / Economy	***Barriers to Professional Development (% of teachers reporting)***				
	Cost	**Support**	**Time**	**Supply**	**Incentives**
CABA (Arg.)	45.8	36.4	75.6	45.0	60.0
U. Arab Emirates	46.6	34.6	46.0	32.2	53.5
Australia	41.8	22.8	59.4	20.4	33.5
Austria	17.2	15.9	47.0	51.1	41.4
Belgium	30.7	21.5	51.5	39.6	46.9
Flemish C. (Belg.)	56.7	13.5	53.8	37.6	61.6
Brazil	62.6	65.8	55.9	38.2	58.3
Alberta (Can.)	35.6	15.0	51.6	32.7	41.9
Chile	78.0	63.8	69.3	61.9	74.9
Colombia	78.2	59.5	53.4	41.1	67.5
Shanghai (China)	25.2	24.7	55.0	25.3	45.8
Cyprus	36.2	39.9	53.6	43.5	54.9
Czech Republic	30.5	19.1	55.8	20.1	28.0
Denmark	47.0	16.5	49.0	36.2	42.3
England (UK)	52.8	27.0	64.5	27.7	44.1
Spain	40.9	29.1	57.3	52.9	76.4
Estonia	30.6	11.6	37.9	30.1	10.3
Finland	37.1	25.2	55.0	34.6	48.2
France	26.0	13.9	47.9	40.4	47.8
Georgia	26.3	13.5	26.2	26.7	42.4
Croatia	36.0	19.1	29.1	42.0	39.8
Hungary	(*)	(*)	(*)	(*)	(*)
Israel	22.0	26.9	51.2	28.3	65.2
Italy	55.7	35.0	54.3	40.8	72.7
Japan	61.4	57.7	87.0	38.2	47.0
Kazakhstan	29.6	31.3	41.0	19.3	19.5
Korea	59.0	72.3	89.0	39.6	66.1
Lithuania	53.4	24.9	52.1	44.2	29.1
Latvia	31.6	13.2	37.5	22.2	22.2
Mexico	57.6	66.4	55.8	55.4	73.8
Netherlands	22.2	19.4	42.7	30.8	17.2
Norway	41.5	27.1	54.7	18.7	34.3
New Zealand	39.2	23.7	55.7	32.7	43.2
Portugal	69.0	90.1	79.7	57.2	85.4
Romania	69.5	22.6	49.3	23.8	61.2
Russian Fed.	30.8	24.7	44.9	23.0	27.6
Saudi Arabia	47.1	70.5	67.6	62.9	84.2
Singapore	20.8	19.9	64.5	21.9	38.2
Slovak Republic	37.8	15.6	35.4	44.4	39.5
Slovenia	45.9	23.8	54.2	33.2	47.7
Sweden	46.4	31.8	56.8	41.8	29.8
Turkey	41.0	54.8	54.7	49.3	68.0
Chinese Taipei	30.3	25.8	73.3	39.1	56.6
United States	35.4	19.3	45.7	27.3	49.0
Viet Nam	34.4	40.6	46.4	30.0	36.9
South Africa	45.8	51.1	48.9	35.1	62.1

Note: results for cities with a population greater than 100,000. (*) Data not available.

Source: TALIS 2018.

Three out of the five Latin American education systems participating in the survey are among the top 10 percentages on this barrier: Chile (74.9%) and Mexico (73.8%), Colombia (67.5%). Buenos Aires (60.0%) and Brazil (58.3%) show lower ratios, but still higher than thirty other economies.

Table 5 presents a summary view of our findings by country groups. Overall, our exploratory analysis shows that Latin American countries seem to have a relatively high percentage of principals from urban settings reporting a lack of qualified teachers hindering instruction. Other non-European, non-OECD countries indicate a similar situation. However, causes might differ as Latin American countries show, on average, a higher percentage of teachers who work at multiple schools, a higher concentration of work hours on instruction and a lower percentage of full-time educators attending in-person professional development courses. Furthermore, together with other OECD countries, Latin American economies average a higher percentage of teachers reporting lack of time as a barrier in accessing CPD.

Table 5. Summary of indicators of why lack of non-teaching non-administrative contractual work hours might hinder teachers' access to CPD. Year 2018.

Region	*Lack of qualified teachers as a problem (%)*	*Teachers who work at one school (%)*	*Time full-time teachers spend teaching (%)*	*Full-time teachers' who attended courses in person last 12 months (%)*	*Teachers who report lack of time as a barrier to CPD (%)*
Latin America	26.0	85.3	68.9	62.3	62.0
Europe	18.7	94.4	52.9	78.7	51.0
Other OECD	18.2	96.2	50.1	79.5	63.0
Other	27.2	95.1	57.0	79.8	49.9

Note: results are country averages for data from cities with a population greater than 100,000. Latin America and Europe both include regional countries, both OECD and non-OECD. The rest of the countries are grouped by OECD participation.
Source: TALIS 2018.

Though enabling a wide array of comparative research, TALIS data has some limitations in analyzing the implications of organizational structures on access to CPD. When analyzing work hours, TALIS imposes two constraints. In the first place, TALIS does not collect information on how many hours teachers work across all schools. This omission is particularly significant for economies where a large number of teachers work at multiple schools. In the second place, the TALIS Teacher Questionnaire does not distinguish between paid and unpaid work hours, a key aspect of the institutional framework around which teaching careers are structured. Differentiating these situations is important as having to undertake essential instruction related work during non-contractual, informal, work hours, might be an obstacle for participating in in-service training, particularly as it is often the case that such development activities take place outside of in-school working hours.

Conclusion

SDG 4.c aims at increasing the supply of qualified teachers by 2030 and states that international cooperation plays a key role in achieving this, in particular in the developing world. We argue that this challenge is two-fold: attracting talented individuals to the teaching profession and preparing them well through initial teacher training programs and, in parallel, improving the skills of those already working as teachers.

The article focused on this second group, especially in Latin American countries participating in TALIS 2018. We showed that in some countries, institutional characteristics of the teaching profession such as working in several schools, working long hours, a high concentration of instruction time over working time, high costs associated to training, lack of employers' support for training and conflicting time schedules might create a structure that hinders attendance to continuous professional development programs. Furthermore, we argue that adapting TALIS surveys to better capture the proportion of paid and unpaid work hours, incentive structures for CPD and overall time spent working across multiple schools could aid in identifying possibly overlooked organizational constraints on teachers' professional development. In order to design and implement the CPD programs that aim to achieve SDG 4.c, international cooperation agencies and national governments need to take these institutional aspects into account.

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