Moving the Needle on Literacy: Lessons Learned from a School Where Literacy Rates Have Improved Over Time

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Literacy is the most important skill children are required to master during their early school life. At the same time, much has been written about both the inadequate preparation of teachers to teach reading and the ever-increasing number of poor readers in our schools. In this study, we examined teachers' perceptions of the factors that have contributed to their school's success in improving children's literacy scores. We used a sequential explanatory mixed methods research design where Phase 1 involved collecting quantitative data to document the improvement in reading and asking the teachers to fill out a questionnaire, while Phase 2 comprised gathering qualitative data where the principal and a language arts teacher commented on the findings from Phase 1. The results revealed three important themes that teachers perceive contributing to their school's success. First, teachers collaborate weekly on their own learning, plan instruction together, and provide support for each other. Second, formative assessments are shared within each grade and data are used to inform areas of growth, not to evaluate teachers' performance. Third, the school focuses on improving reading and believes in the child's continuous growth. Taken together, the findings of our study suggest that teachers perceive success to be a team effort grounded on theory and the principles of collaborative learning.

La littératie constitue l'habileté la plus importante que les enfants doivent maitriser pendant leurs premières années à l'école. Parallèlement, on a beaucoup écrit sur la préparation inadéquate des enseignants en matière d'enseignement de la lecture et sur le nombre croissant d'élèves avec des compétences insuffisantes en lecture. Dans cette étude, nous avons examiné les perceptions qu'ont les enseignants des facteurs ayant contribué à la réussite de leur école dans l'amélioration des compétences des élèves en lecture. Nous avons employé un modèle exploratoire et séquentiel de recherche à méthodes mixtes. Pendant la première phase, nous avons recueilli des données quantitatives afin de documenter l'amélioration en lecture et avons demandé aux enseignants de compléter un questionnaire. La deuxième phase a consisté en la cueillette de données qualitatives ou le directeur de l'école et l'enseignant de langue ont commenté les résultats de la première phase. Les résultats ont révélé trois thèmes importants relatifs aux perceptions des enseignants quant à la réussite de leur école. En premier lieu, les enseignants collaborent de façon hebdomadaire sur leur propre développement, planifient les cours ensemble et s'appuient mutuellement. Deuxièmement, on partage les évaluations formatives entre enseignants de la même année et on étudie les données pour identifier les aspects à améliorer, pas pour évaluer la performance des enseignants. Troisièmement, l'école mise sur l'amélioration de la lecture et croit en l'épanouissement continu des élèves. Globalement, les résultats de notre étude indiquent que les enseignants perçoivent la réussite comme découlant d'un effort collectif ancré dans la théorie et les principes de l'apprentissage collaboratif.

Reading is undoubtedly one of the most important skills children are required to master during their early school life. Researchers have shown that poor reading is associated with higher dropout rates (e.g., Daniel, Walsh, Goldston, Arnold, Reboussin, & Wood, 2006), fewer job opportunities (e.g., Frank, Phythian, Walters, & Anisef, 2013; Rubenson, Desjardins, & Yoon, 2007; Smith & Fernandez, 2017), and poorer health outcomes (e.g., DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004; Rubenson et al., 2007). Researchers have also shown that several factors contribute to children's reading performance (e.g., Hulme & Snowling, 2013). These factors can be grouped into two major categories: factors related to the children themselves and factors related to the settings (e.g., family, school) in which the child grows and learns to read. According to the ecological systems theory of development, functioning and development are not merely reflections of children themselves, but also of the nature of experiences, resources, and interactions encountered by children across different settings (e.g., Bronfenbrenner, 1979, 1986). Because of the relation between early reading outcomes and later academic success, research exploring the contribution of different settings (e.g., school) to children's reading ability is crucial in an effort to understand the conditions under which a setting can enhance children's learning. Thus, the purpose of this study was to explore the characteristics of a school that has demonstrated success in achieving above-average scores in reading and growth over time.

We already know that cognitive skills such as phonological awareness and rapid naming speed are strong concurrent and longitudinal predictors of children's reading ability (e.g., Caravolas Lervåg, Defior, Seidlová Málková, & Hulme, 2013; Georgiou, Parrila, & Papadopoulos, 2008; Parrila, Kirby, & McQuarrie, 2004) and core deficits in reading disabilities (e.g., Melby-Lervåg, Lyster, & Hulme, 2012; Torppa, Georgiou, Salmi, Eklund, & Lyytinen, 2012; Wolf & Bowers, 1999). Family characteristics such as home literacy environment, parents' expectations, and socioeconomic status have also been found to contribute to children's reading performance (e.g., Aikens & Barbarin, 2008; Froiland, Peterson, & Davison, 2012; Liu, Manolitsis, & Georgiou, 2018; Manolitsis, Georgiou, & Tziraki, 2013; Myrberg & Rosén, 2009).

More recently, researchers have shown that part of the variance in children's reading performance is also accounted for by school/classroom membership (e.g., Ahtola et al., 2007; Grilli, Pennoni, Rampichini, & Romeo, 2016; Torppa et al., 2016). Classroom environments that are rich in literacy materials, that have teachers with high expectations of their students and with adequate preparation to teach reading, that provide opportunities for children to be involved in the shared-book reading experiences, that provide support and opportunities for writing, and that promote stimulating teacher–child conversations enhance children's language and literacy skills (e.g., Bryant, Burchinal, Lau, & Sparling, 1994; Carr, Mokrova, Vernon-Feagans, & Burchinal, 2019; Denton, Foorman, & Mathes, 2003; Hu, Wu, Curby, Wu, & Zhang, 2018; Pianta, LaParo, Payne, Cox, & Bradley, 2002; Weigel, Martin, & Bennett, 2005). The quality of classroom experiences has been commonly described in terms of structure (i.e., distal indicators of quality, such as teacher-to-child ratio) and process (i.e., children's academic and social interactions with teachers and peers) (e.g., Harms, Clifford, & Cryer, 2005).

However, an effective teacher of reading should first and foremost possess content specific knowledge. Even though the way of teaching reading has provoked heated debates in the English-speaking world (e.g., Chall, 1983; Goodman, 1986), researchers tend to concur that teachers must have content knowledge in both bottom-up (i.e., phonemic awareness and the alphabetic principle/phonics generalizations) and top-down (i.e., comprehension) processes that underlie reading acquisition (e.g., International Literacy Association, 2010; Pressley, 2006; Snow, Burns, & Griffin, 2005). According to Moats (1994), teachers cannot provide the necessary instruction to

young and struggling readers if they themselves do not have an explicit understanding of these concepts.

Unfortunately, evidence from studies that have assessed teachers' content knowledge suggests that teachers demonstrate limited knowledge of basic language concepts (e.g., Bos, Mather, Dickson, Podhajski, & Chard, 2001; Cunningham, Perry, Stanovich, & Stanovich, 2004; Moats, 1994). In one of the early studies, Moats (1994) assessed teachers' knowledge of terminology and skills related to phonemic awareness, letter-sound correspondences, and morphemes. Findings revealed that teachers displayed very little knowledge about the terminology, such as phonemic awareness. Teachers also demonstrated a lack of skills related to phonemic awareness. Similar results have been reported in more recent studies (see e.g., Binks-Cantrell, Washburn, Joshi, & Hougan, 2012; Carreker, Joshi, & Boulware-Gooden, 2010; Washburn, Binks-Cantrell, Joshi, Martin-Chang, & Arrow, 2016; Washburn, Joshi, & Binks-Cantrell, 2011a; Washburn, Joshi, & Binks, 2011b). For example, in a comparative study examining preservice teachers' knowledge and skills related to reading in Canada, New Zealand, England, and the United States, Washburn et al. (2016) found that Canadian preservice teachers obtained their highest score in items measuring their knowledge of phonemic awareness (answered 69% of the items correctly) and their lowest in items measuring their knowledge of morphological awareness (answered 46% of the items correctly). While both of these scores were above average (52% and 37%, respectively), they suggest insufficient knowledge of the two most important skills involved in learning to read English.

Fortunately, some studies have also shown that when teachers are explicitly taught basic language constructs in either the context of preservice teacher education or in-service teacher professional development, teachers' knowledge increases (e.g., Moats & Foorman, 2003; Spear-Swerling & Brucker, 2003, 2004; Spear-Swerling, 2009), and this increase is associated with improved student reading performance (McCutchen et al., 2002; Piasta, Connor, Fishman, & Morrison, 2009; Spear-Swerling & Brucker, 2003, 2004).

A common feature of the aforementioned studies is that they were all quantitative and examined knowledge defined by researchers as important rather than teachers' perceptions of what they find important in improving performance. Further, many of the studies did not include measures of student performance. In this study, we used a mixed-methods design and examined what teachers in a school that has demonstrated improvement in literacy scores (see the Fraser Institute's *Report Card on Alberta's Elementary Schools* [Cowley & Easton, 2017] for external validation) see as contributing to the success of their school. More specifically, we tried to gain more information on what language arts teachers perceive as having the largest impact on their students' reading performance by asking them to fill out a questionnaire that was developed to cover different aspects, such as the school's belief on continuous learning, the professional development on basic literacy concepts that teachers have engaged in, the use of formative and summative assessments, the availability of high-quality resources at school, and the support of parents. We also asked the principal and one of the language arts teachers to comment on the results from the teachers' questionnaire and verified the school's success in literacy with standardized measures of reading.

Method

Participants

Our sample consisted of all 854 children (445 males, 409 females) attending Grade 1 to 9 (Grade

1: 89; Grade 2: 77; Grade 3: 87; Grade 4: 94; Grade 5: 110; Grade 6: 122; Grade 7: 94; Grade 8: 90; and Grade 9: 91) at ES (pseudonym used for the school in order to maintain its anonymity), a public school in Western Canada. The school is considered one of the large schools in its district, serving primarily children from middle to upper middle socioeconomic backgrounds. Although the majority of children at ES are Caucasian, the school has a significant representation of children from East Asian, African, and Middle Eastern countries. One hundred fifty children are coded as English Language Learners and 58 children are receiving special education. Over the last five years, ES has put a heavy emphasis on implementing evidence-based practices in reading and has been taking initiatives to enhance teachers' capacity prior to this study.

With the exception of the Grade 1 children, who were tested only twice (January and May), all children were assessed three times during the 2017-2018 school year (September, January, and May) on a set of reading measures (see below). These are measures administered by the school teachers to screen for possible reading difficulties and to monitor children's growth in different reading skills. The children's mean age during the first measurement point was 6.11 years in Grade 1, 6.76 years in Grade 2, 7.76 years in Grade 3, 8.87 years in Grade 4, 9.73 years in Grade 5, 10.76 years in Grade 6, 11.75 years in Grade 7, 12.73 years in Grade 8, and 13.89 years in Grade 9.

Following the assessment of children on different reading measures, we recruited all language arts teachers from ES (*n*=16; all female) to fill out a questionnaire (see below). Finally, we interviewed the principal of ES (BB) and a language arts teacher (FF) to elicit their reaction to the results of the teachers' questionnaire. BB has been the principal of ES for nine years and FF has been a language arts teacher for 15 years (nine of which at ES).

Materials

Children's reading ability. To assess children's reading ability, four measures were administered: Word Reading Efficiency (WRE; Torgesen, Wagner, & Rashotte, 2012), Phonemic Decoding Efficiency (PDE; Torgesen et al., 2012), the Test of Silent Word Reading Fluency (TOSWRF; Mather, Hammill, Allen, & Roberts, 2014), and the Test of Silent Word Reading Efficiency and Comprehension (TOSREC; Wagner, Torgesen, Rashotte, & Pearson, 2010). The first two were individually administered and the last two group administered.

Teachers' questionnaire. All language arts teachers at ES were asked to fill out a questionnaire, rating 16 statements from 0 (not important) to 4 (extremely important) regarding the factors that have contributed to their school's demonstrated growth and above average scores in reading skills. At the bottom of the questionnaire, teachers were also encouraged to add further comments (if they had any). The questionnaire was developed by the authors for the purpose of this study and the items can be found in Appendix A. To derive a score in each item, we averaged the ratings of the teachers on each item.

Procedure

A sequential explanatory mixed methods research design was used to explore the factors associated with the school's success in improving children's reading performance over time. Phase 1 involved collecting quantitative data. This was done for two reasons: first, to document the school's above-average scores in reading and the growth over time, and second, to obtain teachers' perspective on what factors contribute to this success. Phase 2 involved collecting qualitative data by asking the principal as well as one of the language arts teachers to comment on the results from

the teachers' questionnaire. For the purpose of this study we performed a quantitative-driven cross over analysis (Cresswell & Clark, 2017).

Results

Table 1 presents the descriptive statistics on the measures used in the study as well as the results of repeated measures ANOVA, separately for each task and grade. The scaled scores in WRE and PDE were combined to produce an index score of word reading efficiency (see Torgesen et al., 2012, for details on how to obtain the index score). An examination of the distributional properties of the variables revealed that they were within acceptable levels (Tabachnick & Fidell, 2012). In addition, the assumption of sphericity was met. The results indicate first that, with a few exceptions, the performance of the children in all measures improved over time. Second, by May, the average performance in each task was in the high average range. Notably, in TOSWRF, the average performance was higher than 110 in each grade.

Next, we asked the language arts teachers to rate different factors that may contribute to the observed success of their school in reading. Table 2 presents the descriptive statistics on each statement. Four items received the highest mean scores (above 3.80), namely, "Weekly collaborative teams focusing on job-embedded professional development," "Common formative assessments given by grade level teams," "Common team planning provided outside of the weekly requirement," and "A school wide focus on improving reading." In turn, the items "Professional development offered by the EMPOWER team,"[1] "Having support from parents," "Professional development on reading I have pursued outside of what is offered at the district of school level," and "Professional development on reading offered by the School Board" received the lowest scores.

Finally, we asked the principal and a language arts teacher at ES to comment on the results from the teachers' questionnaire. BB (principal) said,

> These results do not surprise me. One of the strongest aspects of the culture of our school is our belief that for continuous improvement to be realized, the teachers must be the most prolific learners in the building. Our staff's belief in this concept is evident with their selection of their weekly collaborative team work as the largest factor in improving reading scores. One of the most powerful practices a collaborative team can engage in is the analysis of data from ongoing creation of common formative assessments. This data provides teams with information regarding which students require intervention as well as providing evidence of the effectiveness of their instructional practice.

FF (language arts teacher) commented,

> These results reaffirm our school's commitment to job embedded professional development and team work. Teachers collaborate for a minimum of one hour per week after school and take additional days during school hours (supply teachers are provided) to analyze reading screener data, research proven instructional strategies, and plan tier 2 and 3 intervention. They also ensure that there is equity in what students are expected to learn and be able to perform from teacher to teacher, thus they plan together and build common formative and summative assessments.

Table 1

Descriptive Statistics on all Measures Used in the Study

	TOWRE [a]				TOSWRF [a]				TOSREC [a]			
	September	January	May		September	January	May		September	January	May	
Grade	M(SD)	M(SD)	M(SD)	F	M(SD)	M(SD)	M(SD)	F	M(SD)	M(SD)	M(SD)	F
1		99.96 (13.40)	108.37 (13.94)	121.24***		96.19 (13.00)	111.64 (13.92)	142.83***		85.24 (14.33)	96.97 (14.73)	108.26***
2	103.81 (15.32)	106.16 (14.53)	107.67 (14.87)	9.87***	102.84 (13.65)	108.79 (13.60)	113.80 (11.85)	86.46***	88.54 (15.40)	95.26 (14.43)	98.57 (15.70)	41.51***
3	102.92 (13.49)	103.27 (13.52)	104.52 (12.95)	1.10	108.36 (13.20)	111.21 (13.50)	116.01 (11.42)	23.72***	99.58 (16.00)	102.45 (14.57)	104.48 (13.48)	12.57***
4	103.48 (11.58)	104.76 (12.90)	107.29 (12.97)	16.88***	111.01 (11.14)	112.98 (11.72)	116.15 (9.62)	21.76***	101.81 (17.19)	104.88 (16.21)	108.51 (16.21)	17.59***
5	105.85 (12.81)	108.33 (12.20)	112.93 (13.51)	89.44***	114.06 (13.80)	114.90 (11.99)	115.33 (9.68)	1.65	107.03 (19.76)	107.93 (16.52)	109.13 (15.65)	1.64
6	108.24 (13.21)	107.87 (12.77)	112.44 (13.95)	31.26***	110.65 (15.68)	114.33 (13.60)	113.55 (11.72)	13.82***	108.89 (15.56)	111.58 (14.43)	107.43 (13.80)	12.89***
7	110.07 (15.79)	107.92 (15.80)	110.97 (14.66)	7.00***	109.46 (14.47)	108.08 (14.24)	110.50 (11.71)	2.87	103.37 (15.32)	107.93 (15.49)	107.88 (12.51)	14.43***
8	109.85 (12.83)	110.76 (13.09)	113.23 (12.19)	8.64***	110.90 (13.49)	113.37 (11.23)	114.75 (11.25)	6.62**	105.81 (14.62)	108.62 (13.42)	107.55 (12.68)	6.84***
9	108.80 (12.65)	108.55 (13.89)	111.00 (13.23)	4.37*	112.20 (17.88)	111.81 (13.61)	115.67 (13.11)	5.75**	105.61 (17.72)	104.85 (16.60)	110.30 (14.54)	13.06***

Note. [a]. The scores on this task are standard scores.

Table 2

Descriptive Statistics on the Teachers' Questionnaire

	n^a	M	SD	Min	Max
Common formative assessments given by grade level teams.	16	3.87	.34	3	4
Data from standardized assessments (e.g., TOWRE).	14	3.14	.86	2	4
Professional development on the 5 pillars of reading.	16	3.31	.70	2	4
Professional development on reading offered by the School Board.	16	2.06	.77	1	4
Professional development offered by the Empower team.	11	2.90	.83	1	4
Professional development on reading I have pursued outside of what is offered at the district or school level.	11	2.36	.80	1	4
Weekly collaborative teams focusing on job embedded professional development.	16	3.87	.34	3	4
Common team planning time provided outside the weekly requirement.	16	3.81	.40	3	4
Availability of school-based colleagues to support changes in reading practice.	16	3.68	.47	3	4
The school's belief in continuous improvement.	16	3.62	.50	3	4
The school's reciprocal accountability process.	16	3.25	.77	2	4
A school wide focus on improving reading.	16	3.81	.54	2	4
Access to quality reading resources.	16	3.56	.62	2	4
Data is used to inform areas for growth, not evaluate teachers' performance.	16	3.68	.60	2	4
The principal participates in reading PD alongside the teachers.	16	3.00	.63	2	4
Having support from parents.	16	2.75	1.12	0	4

Note. [a]. This indicates the number of teachers that responded to this item.

Discussion

Several studies have shown that cognitive factors such as phonological awareness and rapid naming speed as well as family factors such as home literacy environment and parents' expectations are significant predictors of children's reading performance (e.g., Hulme & Snowling, 2013; National Early Literacy Panel, 2008). In this study, we aimed to gain more insights into the role of school by soliciting the language arts teachers' perspective on what factors they see as contributing to the success of their school in improving their students' reading performance.

First, the results of the reading screeners (i.e., TOWRE, TOSREC, and TOSWRF) confirmed that the average performance of the children at ES was at the high average range (at least by May). With a few exceptions, the performance in each task and grade also improved over time. Given that we used standard scores in our study, we attribute this above expected improvement, at least

partly, to the effects of good instruction. We should note that as the school's focused work on improving reading scores had started two years before the study took place, many of the children had already enjoyed quality literacy instruction in their previous grades, making further improvements more difficult to obtain. Irrespective of this, our results for the most part show larger than expected growth in all measures, verifying the school's status as providing quality instruction. The natural follow-up question then is what allows teachers to be effective in teaching reading and their students to achieve these high scores.

The results of the teachers' questionnaire as well as the reaction of the principal and of the language arts teacher to these results shed some light on this question. There is a group of items that received an average score higher than 3.80 (4 indicating *extremely important*). What is shared between these items is the teachers' collaborative approach to learning, assessment, and programming for their students. All teachers know what is going on in each other's classes, and one teacher's struggle becomes everyone's problem, providing an excellent opportunity for further learning. At ES, teachers have created a community of learners that work together for the improvement of everyone's teaching. This is summarized in FF's comment that "Teachers collaborate for a minimum of one hour per week after school and take additional days during school hours (supply teachers are provided) to analyze reading screener data, research proven instructional strategies, and plan tier 2 and 3 intervention." This community of learners shares the belief that improvement happens only if it comes from inside. This explains why items such as "Having support from parents," "Professional development offered by the EMPOWER team," "Professional development offered by the School Board," or "Professional development on reading I have pursued outside of what is offered by the district or school" received relatively low scores.

"Availability of school-based colleagues to support changes in reading practice," "The school's belief in continuous improvement," and "Access to high quality reading resources" were also deemed to be very important. Again, this relates to school's culture that nurtures autonomy, responsibility, and sustainability within a shared framework that supports the maximization of human capital. Being part of a school that believes in continuous improvement also encourages teachers to explore ways to improve their own teaching.

What we also observed in the process of triangulating the evidence regarding the factors that have contributed to the success of ES in reading is that there is a good alignment between the teachers' perceptions of what they think is important and the principal's actions to enhance the capacity of his staff. The principal has been an advocate of collaborative learning and has provided the means for his teachers to collaborate. As the principal indicated in his interview, "collaboration" does not mean sharing materials, but an active engagement in the process of developing a plan for each child and in designing materials to teach each child. With a school-wide focus on improving literacy comes accountability and for this reason BB has been holding quarterly accountability meetings with his teachers. In these meetings, teachers are expected to present baseline data on individual student reading performance, explain their team's plan on how to address individual student reading difficulties, identify an evidence-based instructional methodology to address the difficulties, determine how they will progress monitor and, when the intervention is complete, provide evidence of effectiveness. The goal of these meetings is for the grade level team and the leadership team to learn together how best to meet the needs of each student. By ensuring all adults take collective responsibility for improving reading results, the school's goal of having every student reading at "grade level or better" becomes more attainable.

At the same time, there seems to be a misalignment between the factors that teachers perceived as the most important for school's success and the practices used to support literacy by

the school board. For example, every year the school board organizes different professional development activities on literacy-related topics in order to enhance its teachers' capacity. The item tapping on this issue ("Professional development on reading offered by the School Board") received the lowest score by the teachers. Teachers also rated highly the item on the availability of school-based colleagues to support changes in reading practice. Currently, the school board has literacy consultants whose job is to visit each school to support teachers as they implement different reading strategies. Although, admittedly, we did not ask teachers to evaluate the support they have been receiving by the literacy consultants, if that support was adequate, they would not rate the availability of school-based colleagues so highly. Teachers clearly regard daily in-house support and joint problem solving with peers as more important for quality instruction than intermittent access to external experts.

To conclude, our findings add to those of a growing body of studies examining the role of school/classroom environment in children's reading acquisition (e.g., Denton et al., 2003; Foorman & Torgesen, 2001; Pianta et al., 2002; Torppa et al., 2016) suggesting that success within a school is a team effort grounded on theory and the principles of job embedded collaborative learning.

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Note

1 EMPOWER is a tier 3 reading intervention program. The low scores on this item may reflect the fact that not all teachers at ES received instruction in EMPOWER.

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Appendix A: Reading Success Survey

Over the last three years, TBA has consistently demonstrated growth and above average scores in reading. We are interested in what teachers think has contributed to this success. Below are some possible reasons. Please circle from 0 (not important) to 4 (extremely important) how important you feel each factor is. Also, if you feel there is a factor not captured in these statements, please write it below the list.

0 (not important), **1** (maybe important), **2** (important), **3** (very important), **4** (extremely important)

CONTRIBUTES TO SUCCESS					
Common formative assessments given by grade level teams.	0	1	2	3	4
Data from standardized assessments (e.g., TOWRE).	0	1	2	3	4
Professional development on the 5 pillars of reading.	0	1	2	3	4
Professional development on reading offered by the School Board.	0	1	2	3	4
Professional development offered by the Empower team.	0	1	2	3	4
Professional development on reading I have pursued outside of what is offered at the district or school level.	0	1	2	3	4
Weekly collaborative teams focusing on job embedded professional development.	0	1	2	3	4
Common team planning time provided outside the weekly requirement.	0	1	2	3	4
Availability of school-based colleagues to support changes in reading practice.	0	1	2	3	4
The school's belief in continuous improvement.	0	1	2	3	4
The school's reciprocal accountability process.	0	1	2	3	4
A school wide focus on improving reading.	0	1	2	3	4
Access to quality reading resources.	0	1	2	3	4
Data is used to inform areas for growth, not evaluate teachers' performance.	0	1	2	3	4
The principal participates in reading PD alongside the teachers.	0	1	2	3	4
Having support from parents.	0	1	2	3	4

Other: ………