



Nguyen, D. , Ng, D., Luo, W. and Mansor, S.' (2020) Exploring the relationships between instructional leadership and teacher competences: Singapore primary school teachers' perceptions. *International Journal of Leadership in Education*, (doi: [10.1080/13603124.2020.1731765](https://doi.org/10.1080/13603124.2020.1731765))

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## **Exploring the Relationships between Instructional Leadership and Teacher Competences:**

### **Singapore Primary School Teachers' Perceptions**

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#### **Abstract**

This article presents part of the findings drawn from a larger study on school leadership in 28 Singapore primary schools. This article discusses the perceptions of 224 key personnel (i.e., teachers with formal leadership titles) and 462 teachers (i.e., classroom/subject teachers without a formal leadership position) of their school leaders' enactment of instructional leadership and the predictive relationships between instructional leadership and teacher competences. The key findings were (i) Singapore school leaders were perceived to adopt a selective instructional leadership approach, and (ii) instructional leadership practices that focused on promoting professional development and positive school climate were strongly associated with teacher competences. The article contributes to the growing knowledge base on the enactment of instructional leadership in non-Western settings and specifies the relationships between instructional leadership and teacher-level variables.

**Keywords:** Instructional Leadership; Principal Leadership; Singapore; Teacher Competence; Teacher Competency

#### **Introduction**

Instructional leadership is one of the most frequently studied models in educational leadership since 2005 (Bush & Glover, 2014; Gumus, Bellibas, Esen, & Gumus, 2016). The empirical research on instructional leadership originally commenced in the United States in the 1970s (e.g., Brookover & Lezotte, 1979; Weber, 1971). Beyond the original perspective of viewing a principal as a sole

source of instructional leadership in a school, the construct has recently been interpreted to cover the roles of other instructional leaders such as vice-principals, teacher leaders, and external coaches (Neumerski, 2013). This article is drawn from an empirical study investigating the enactment of instructional leadership of primary school leaders that refer to principals and vice-principals. Despite extensive research, there remain significant areas of instructional leadership that merit further research. Two of these areas are presented in the following paragraphs.

Firstly, instructional leadership, as it is argued, is one of school leaders' major responsibilities, together with a number of other duties such as stakeholder accountability and working with external parties. The literature has stressed that being an instructional leader involves performing a multiplicity of roles such as setting goals, coordinating the curriculum, planning professional development, and promoting a positive learning climate (e.g., Hallinger, 2005; Hallinger & Murphy, 1985). Often these roles are compounded by urgent matters and time constraints; therefore, even the most determined school leaders meet varied challenges to be active in all these roles (Hallinger, 2000). It remains to be an under-researched issue in the literature as to whether there are some specific instructional leadership roles that may contribute higher impact on enhanced instructional quality and student learning than others do (Grissom, Loeb, & Master, 2013; Neumerski, 2013; Sebastian & Allensworth, 2012). Discussion on this issue would be helpful in informing school leaders of the roles in which they should make greater investments.

Secondly, the current knowledge base on instructional leadership has been heavily derived from American-Anglo contexts. The empirical research on educational leadership and specifically instructional leadership in non-Western cultures (e.g., Asian cultures) remains modest (Hallinger & Bryant, 2013; Walker & Hallinger, 2015). Further exploring the phenomenon of instructional

leadership in non-Western societies is necessary since school leadership is subject to the cultural, political, and societal factors (Hallinger, 2018).

To redress these two gaps in the literature, the current empirical study was conducted to explore the enactment of instructional leadership of Singapore primary school leaders and specify the relationship between instructional leadership and teacher competences. This article focuses on discussing two key research questions as follows.

1. How do primary school leaders enact their instructional leadership as perceived by their teachers?
2. What are the relationships (*if any*) between instructional leadership and teacher competences as perceived by teachers in the investigated schools?

The subsequent sections of the article are organized to: highlight the relevant literature on instructional leadership and its effects and teacher competences; present the statistical results; discuss the key findings; and offer implications for school leaders and future research.

## **Literature Review**

Following the Introduction, the current section reviews three relevant issues in the literature, namely enactment of instructional leadership roles, effects of instructional leadership, and defining the construct of teacher competence.

### ***Enactment of instructional leadership roles***

According to Sheppard (1996), instructional leadership might be narrowly or broadly defined. The narrow perspective defines instructional leadership as a repertoire of direct actions and behaviors to enhance classroom instruction (e.g., Leithwood, 1994). The broad conceptualization covers all leadership practices that either directly or indirectly influence student outcomes and instructional quality such as fostering positive learning environment and defining and sharing school vision. The

current literature seems to advocate the broader view (e.g., Goldring & Greenfield, 2002; Hallinger, 2005; Robinson, Lloyd, Rowe, 2008). This current study is in alignment with the broader view of understanding this construct.

Instructional leadership has undergone over four decades of development with the commencement of empirical works on high-achieving schools in the United States in the 1970s (e.g., Brookover & Lezotte, 1977; Weber, 1971). From the 1980s on, a number of models of instructional leadership have been proposed such as Hallinger and Murphy's (1985) three-dimension model, Robinson et al.'s (2008) five-dimension model, and OECD's (2009) three-dimension model. These models qualify instructional leadership as a multidimensional construct. These models also share key aspects reflecting the leadership roles of school leaders, for example, vision development and alignment, management of instruction, curriculum coordination, promoting a positive school climate, and supporting teacher professional development. Built on the previous empirical studies in Singapore (e.g., Nguyen & Ng, 2014; Nguyen, Ng, & Yap, 2017) and the international relevant literature (e.g., Hallinger & Murphy, 1985; OECD, 2009; Robinson, 2008), our study accordingly adopted four key dimensions of instructional leadership as follows: *(i) aligning teaching practice to school vision, (ii) leading curriculum and teaching, (iii) developing a positive climate for teaching and learning, and (iv) promoting professional development.*

The multidimensionality of the instructional leadership construct implies the myriad of expected roles of school leaders as instructional leaders. Leading a school in a fast-changing society nowadays is getting more and more challenging for school leaders; therefore, active and direct involvement in all of these instructional leadership roles seem to be untenable (Gronn, 2003; Townsend, Acker-Hocevar, Ballenger, & Place, 2013). As a result, there is an interest in

understanding how school leaders enact various instructional leadership roles in reality and across school and national contexts. However, there are two issues in the extant literature: firstly, little has been formally documented about school leaders' enactment of instructional leadership roles in non-Western settings such as Asian societies (Bush, 2014; Hallinger, 2016; Hallinger & Bryant, 2013); and secondly, many of the relevant findings in the literature of this area have been drawn from school leaders' self-reports (Grissom et al., 2013). In an attempt to address these issues, the first aim of this article is to report Singapore teachers' perceptions of their primary school leaders' enactment of instructional leadership roles. This aim is reflected in the first research question of the article: *How do primary school leaders enact their instructional leadership as perceived by teachers?* The next part discusses the extant literature concerning the effects of instructional leadership on instructional quality and student learning.

### ***Effects of instructional leadership***

Classroom instruction and school leadership are shown to have significant effects on student learning (Leithwood, Harris, & Hopkins, 2008). Improved student learning, teacher competence, and organizational capacity are attributed to successful school leadership (Leithwood & Day, 2007). Instructional leadership has been documented to affect student learning and school effectiveness through different paths. Hallinger and Heck (1998) reviewed 43 studies to explore the effects of instructional leadership on student achievement, and identified almost no evidence of direct effects, modest support for reciprocal effects between instructional leadership and student achievement, and substantial findings advocating indirect effects. Hallinger and Heck's (1998) maintained that school leaders have indirect effects on student learning through mediating variables such as classroom variables, school goals, and school structure and culture.

Subsequent empirical enquiry has supported the conclusion of Hallinger and Heck (1998)

by further testing the mediated effect model and specifying the mediating variables. For instance, O'Donnell and White (2005) affirmed the positive association between principals' behaviors to promote school learning climate and set vision and the variable of student reading achievement. Heck and Moriyama (2010) reported that instructional leadership practices were positive predictors of enhanced teacher instructional quality, which in turn influenced student achievement (Heck & Moriyama, 2010). Finnigan (2010) specified that principal leadership practices influenced teachers' self-beliefs about their ability to improve student learning, and their higher expectancy led to better improvements through more teachers' efforts. In addition to those empirical pieces, Hallinger and Murphy's (2013) review highlighted that school leaders' instructional leadership practices can indirectly affect student learning through: creating conditions for positive learning climate, maintaining focus on instruction, leading instructional change, and supporting staff professional learning communities.

To sum up, the key mediated variables in the indirect effect models are: promoting positive school climate, fostering professional learning communities, defining and sharing vision, aligning in-school processes and activities to vision, and developing teacher competences. Although 'developing teacher competences' is one of the important pathways through which school leaders influence student learning, there has been little specificity regarding which instructional leadership roles might yield higher positive effects on teacher competences in the extant literature (Sebastian & Allensworth, 2012). It is, therefore, necessary to specifically address the second research question of this current article: *What are the correlational relationships (if any) between instructional leadership and teacher competences?* Addressing this question is helpful in providing empirical evidence on whether there is a correlation between instructional leadership and on which instructional leadership roles may generate higher positive impacts on teacher competences. In the

subsequent part, the article elaborates on the concept of teacher competence and its dimensions.

### ***Teacher Competences***

Teacher competence or teacher competency is an established concept in the educational setting. Teacher competence is conceptualized as “an integrated set of personal characteristics, knowledge, skills and attitudes that are needed for effective performance in various teaching contexts” (Tigelaar, Dolmans, Wolfhagen, & van der Vleuten, 2004, p. 255). There is generally a growing consensus about understanding ‘competence’ from a broad perspective that covers an integrated set of knowledge, skills, and attitudes needed to perform a task or a job. European Commission (2013, p. 46) provided comprehensive insights into the key domains of teacher competence that include: knowledge and understanding, skills, and dispositions. The core categories in the first domain are: subject matter knowledge, pedagogical knowledge, pedagogical content knowledge, developmental psychology, and assessment methods. Skills needed for a competent teacher consist of planning and coordination, classroom management, peer collaboration, and reflection. Dispositions comprise teachers’ beliefs, attitudes, values, and commitment.

Of these three domains, ‘knowledge’ has garnered substantial attention in the scholarly research on teacher competences. Darling-Hammond (2005, p. 11), for instance, proposed a framework of three integrated categories: knowledge of learners and their development in social contexts (i.e., student learning, human development, and language); knowledge of subject matter and curriculum goals (i.e., educational goals and purposes for skills, content, and subject matter); knowledge of teaching (i.e., content plus content pedagogy, teaching diverse learners, assessment, and classroom management).

Earlier, Shulman (1987) identified main categories of teachers’ knowledge base that include: content knowledge, general pedagogical knowledge, curriculum knowledge, and



pedagogical content knowledge. Shulman (1987)'s fundamental components of teacher competence (knowledge) have guided empirical studies relevant to competences for pre-service and in-service teachers (e.g., Dekker-Groen, van der Schaaf, & Stokking, 2013; Hattie, 2009; Kleickmann et al., 2013).

From the perspective of teaching and training, competences can be learned and developed (van der Klink, Boon, & Schlusmans, 2007). It is argued that development of teacher competence is not only subject to the personal, teacher education, or system efforts, but also requires the accountability of school leadership. Referring to the conceptual works above (i.e., Darling-Hammond, 2005; European Commission, 2013; Shulman, 1987), the current study delineated teacher competence into four dimensions: (i) *curriculum content competence*, (ii) *pedagogical competence*, (iii) *assessment competence*, and (iv) *knowledge on student learning*. The more specific description of these dimensions is presented in the next section.

## **Method**

The current article reports part of the findings drawn from a larger study on school leadership in Singapore primary schools. This study used Rasch analysis for the purpose of scale development, more specifically for identifying non-fitting questionnaire items and persons (i.e., respondents) (*see* Boone, Staver, & Yale, 2013; Rasch, 1960). Rasch analysis has been endorsed and used for development and validation of instruments in the field of leadership and management (e.g., Dussault, Frenette, & Fernet, 2013; Sinnema, Ludlow, & Robinson, 2016). Upon consideration and exclusion of non-fitting / mistfit items and persons in scales, tests of descriptive statistics and inferential statistics (i.e., ANNOVA, hierarchical regression) were run. This section presents the processes of sampling, scale development, and Rasch analysis.

## **Participants and procedure**

Singapore, which is a small island city-state in Southeast Asia, has a population of 5.3 million, highly densely inhabited in an area of 660sq km (Singapore country profile, [bbc.co.uk](http://bbc.co.uk)). There were totally 185 state (government or government-aided) primary schools in Singapore (Ministry of Education Singapore, 2014) at the time of commencing this research. A group of 28 primary schools accepted the invitation to participate in this study. This sample included representatives from all four school zones (i.e., North, South, East and West) of the country (*see* Ministry of Education Singapore, 2020). The participants comprised 58 school leaders (i.e., principal and academic vice-principals), 225 key personnel (i.e., teachers with leadership positions such as head of department, subject head, or level head) and 468 teachers (i.e., subject/classroom teachers without a formal leadership position) from the 28 participating primary schools. Among the participants, there were 365 (78%) female teachers and 169 (75.1%) female key personnel. On average, the teacher participants had 10.67 ( $SD = 8.79$ ) years of teaching experience, and the key personnel had 8.00 ( $SD = 6.73$ ) years of teaching experience. In addition to demographic questions (e.g., gender, age, years of teaching experience, and leadership position for key personnel), both teachers and key personnel responded to items on perceived instructional leadership of their school leaders (i.e., principals and vice principals in charge of instruction and curriculum). In addition, teachers also responded to a set of items on teacher competence. All the items were rated on a five-point Likert Scale (1 = strongly disagree and 5 = strongly agree).

## **Instrument development**

Two scales used in this study were instructional leadership and teacher competence. Details on development of the two scales are presented as follows.

### *Instructional leadership scale*

The development of the instructional leadership scale comprised 3 stages as given below. In the first stage, we referred to the extant literature and the current researchers' knowledge of Singapore schools to develop items for each dimension. As noted earlier, the literature (e.g., Nguyen, Ng, & Yap, 2017; Hallinger & Murphy, 1985; OECD, 2009; Robinson, 2008) suggests that the instructional roles of school leaders entail involvement in four dimensions: (i) *aligning teaching practices to school vision*; (ii) *leading curriculum and teaching*; (iii) *developing a positive climate for teaching and learning*; and (iv) *promoting professional development*.

The second stage entailed a discussion of items with scholars in educational leadership. The obtained feedback helped the research team to revise the items. The revision involved rephrasing of the statements to enhance clarity as well as omission and addition of items in each dimension. As a result, the scale had 46 items, more specially: 11 items for the first dimension; 13 items for the second dimension; 11 items for the third dimension; and 11 items for the fourth dimension. Some of the items were deliberately negatively worded for detecting response set.

In the third stage, the research team conducted a pilot study to examine the quality of the revised scale in the second stage. Teachers who participated in a middle leadership program in Singapore were invited to participate in the pilot study, and 34 of them responded. Exploratory factor analysis and item analysis were carried out with the items used to measure each dimension. Based on factor loadings and corrected item-total correlation, twelve items (3 items per dimension) were discarded. In addition, six items were rephrased to improve the clarity.

As a result, the scale of instructional Leadership included 44 items, 8 items on aligning teaching practices to school vision, 10 items on leading curriculum and teaching, 8 items on developing a positive climate for teaching and learning, and 8 items on promoting professional

development. A sample of items of this scale is presented in Appendix 1 at the bottom of the current article.

### *Teacher competence scale*

This teacher competence scale was adapted from Goh, Lee, and Hairon (2009) that developed a scale of teacher competence from a comparative study on teaching and leadership skills in Singapore and Bahrain. The original scale had: 20 items for the dimension of 'curriculum content competence'; 25 items for 'pedagogical competence'; and 20 items for 'assessment competence'. For the current study, the number of items was reduced to 8 items for each dimension and some items were adapted for better wording clarity. In addition, the last dimension 'knowledge on student learning' was added to make a four-dimension scale of 32 items. The expected coverage of each dimension is presented as follows:

- **Dimension 1:** Items in '*curriculum content competence*' were used to measure teachers' self-perceptions of their knowledge on subject matters and interpretation ability of the general curriculum to suit their students.
- **Dimension 2:** Items in '*pedagogical competence*' were used to measure both content and general pedagogical knowledge.
- **Dimension 3:** Items in '*assessment competence*' were used to measure teachers' competences in understanding and applying assessment methods.
- **Dimension 4:** Items in '*knowledge on student learning*' were used to measure teachers' knowledge on learning process and student learning in their specific subjects.

### **Rasch analysis**

#### *Instructional leadership scale*

Rasch analysis was first conducted with each dimension of instructional leadership for teachers and key personnel separately. In Rasch analysis (Rasch, 1960), a person's response to an item is solely decided by the person's ability compared to item difficulty (Boone et al., 2013). In Rasch analysis, a person's ability is not indicated by the raw scores, but a latent score on an interval scale through a nonlinear transformation of the raw scores. It was found that within each dimension the negatively worded items (totally 7 items: 1 or 2 items per dimension) clearly loaded on a second dimension as found in residual-based Principal Components Analysis. In addition, the misfit statistic of the negatively worded items — outfit mean squares were in the range of 1.55-2.85 for teachers and 1.56-3.53 for key personnel. A mean-square outfit statistic of less than 2 was used in this study to decide whether the items fit the Rasch model (Boone et al., 2013; Linacre, 2016). Therefore, in general the negatively worded items did not contribute or even distort the measurement system (*see* Boone et al., 2013; Linacre, 2016). Furthermore, we also found 6 teachers and 1 key personnel with large person misfit due to response set (i.e., They tend to respond identically to all the items including negatively worded items). As a result, we removed them in the next step of Rasch analysis, in which we combined the data for teachers and key personnel and removed all the negatively worded items. In this analysis, all the items showed acceptable fit: the item misfit statistic—outfit mean squares was in the range of .42-1.66 across the four dimensions of instructional leadership. The reliability of person measures was .67, .74, .71, and .80, respectively, for aligning teaching practices to school vision, leading curriculum and teaching, developing a positive climate for teaching and learning, and promoting professional development. The person measures obtained in this analysis were used in this study to examine the relationships between instructional leadership and teacher competence.

#### *Teacher competence scale*

Rasch analysis was also conducted for each of the four teacher competence dimensions with 462 teachers, after removing 6 teachers with response set on items of instructional leadership. It was found that all the 32 items showed good item fit, with the misfit statistic-outfit mean squares ranging from .57 to 1.81. The reliability of person measures was .78, .76, .77, and .75, respectively, for curriculum content competence, pedagogical competence, assessment competence, and knowledge on student learning.

**Table 1.** Demographic Information of Respondents

		Teachers ( <i>n</i> = 462)		Key Personnel ( <i>n</i> = 224)	
		<i>n</i>	%	<i>n</i>	%
Gender	Male	99	21.4	56	25.0
	Female	363	78.6	168	75.0
Teaching experience	0-5	174	37.7	104	46.4
	6-10	103	22.3	63	28.1
	11-20	119	25.8	43	19.2
	21-30	50	10.8	12	5.4
	>31	16	3.5	2	0.9
Leadership position	Head of Department	-	-	55	24.6
	Subject / Level Head	-	-	169	75.4
	Teacher	462	100	-	-

**Table 2.** Overall mean scores and standard deviations of the four dimensions of Instructional Leadership

Instructional Leadership	Teacher (n = 462)					Key Personnel (n = 224)					Total (n = 686)				
	<i>M</i>	<i>SD</i>	Min	Max	Range	<i>M</i>	<i>SD</i>	Min	Max	Range	<i>M</i>	<i>SD</i>	Min	Max	Range
Aligning Teaching Practices to School Vision	3.35	3.03	-5.22	10.78	16.00	4.02	3.08	-4.69	10.78	15.47	3.57	3.06	-5.22	10.78	16.00
Leading Curriculum and Teaching	1.91	1.81	-4.64	8.36	13.00	2.36	1.96	-2.47	8.36	10.83	2.06	1.87	-4.64	8.36	13.00
Developing a Positive Climate for Teaching and	2.87	2.77	-6.56	9.43	15.99	3.78	2.79	-2.64	9.43	12.07	3.16	2.81	-6.56	9.43	15.99
Learning Promoting Professional Development	2.81	2.99	-7.48	9.91	17.39	3.55	2.95	-3.20	9.91	13.11	3.05	2.99	-7.48	9.91	17.39

Rasch scores were then used for statistical analysis to answer the two research questions as presented in the next section. Table 1 summarises the demographic information of participants with valid responses.

## **Results**

The current section presents the statistical results that answer two broad research questions on the enactment of instructional leadership and its relationships with teacher competences. To address the first question, the article presents the results on key personnel and teachers' perceived instructional leadership practices of school leaders and whether demographic variables (i.e., leadership position, age, and gender) affected these participants' perceptions.

### ***How do Singapore school leaders enact their instructional leadership practices as perceived by teachers?***

The means and standard deviations of the four dimensions of instructional leadership are shown in Table 2. Specifically, the highest mean score was on the dimension of 'aligning teaching practices to school vision' (mean = 3.57, SD = 3.06). This is followed by dimensions of 'developing a positive climate for teaching and learning' (mean = 3.16, SD = 2.81) and 'promoting professional development' (mean = 3.05, SD = 2.99). The lowest mean score was on the 'leading curriculum and teaching' dimension.

#### *Leadership position and perceptions of instructional leadership*

As mentioned earlier, the respondents were key personnel and teachers. Table 2 shows the instructional leadership scores rated by key personnel and teachers. To examine whether there was any statistically significant difference in teachers' perceptions with reference to their leadership position, a one-way ANOVA was run, as shown in Table 3. The results indicate significant differences in perception of all the four dimensions of instructional leadership among key personnel



and teachers. On the highest score was 'aligning teaching practices to school vision',  $F(1, 684) = 7.31, p = .007$ , key personnel perceived higher ( $M = 4.02$ ) than teachers ( $M = 3.35$ ). On 'developing a positive climate for teaching and learning', key personnel perceived higher ( $M = 3.78$ ) than the teachers ( $M = 2.87$ ). On 'promoting professional development', key personnel perceived higher ( $M = 3.55$ ) than teachers ( $M = 2.81$ ). On 'leading curriculum and teaching', key personnel perceived higher ( $M = 2.36$ ) than the teachers ( $M = 1.91$ ). In summary, teachers with formal leadership position perceived higher enactment of instructional leadership of school leaders than teachers without formal leadership position did.

**Table 3.** One-way ANOVA for instructional leadership scores and leadership position

Instructional Leadership Dimensions	<i>Df</i>	Mean Square	<i>F</i>	<i>p</i>
Aligning Teaching Practices to School Vision				
Between groups	1	68.018	7.307	.007
Within groups	684	9.308		
Leading Curriculum and Teaching				
Between groups	1	30.811	8.876	.003
Within groups	684	3.471		
Developing a Positive Climate for Teaching and Learning				
Between groups	1	126.536	16.403	.000
Within groups	684	7.714		
Promoting Professional Development				
Between groups	1	83.544	9.445	.002
Within groups	684	8.845		
Overall Instructional Leadership				
Between groups	1	1168.760	13.800	.000
Within groups	684	84.692		

*Gender and teaching experience and perceptions of instructional leadership*

To find out whether there were any statistically significant differences in teachers' perceptions with regards to their gender and teaching experience, one-way ANOVA analyses were run. Table 4 and Table 5 show the results of these analyses.

As seen in Table 4, there was no significant effect of gender on the perceptions of key personnel and teachers on all instructional leadership dimensions.

**Table 4.** One-way ANOVA results for Instructional Leadership score and gender

Instructional Leadership Dimensions	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Aligning Teaching Practices to School Vision				
Between groups	1	1.979	.210	.647
Within groups	684	9.405		
Leading Curriculum and Teaching				
Between groups	1	.240	.068	.794
Within groups	684	3.516		
Developing a Positive Climate for Teaching and Learning				
Between groups	1	2.861	.362	.547
Within groups	684	7.895		
Promoting Professional Development				
Between groups	1	15.878	1.775	.183
Within groups	684	8.944		
Overall Instructional Leadership				
Between groups	1	.157	.002	.966
Within groups	684	86.400		

As seen in Table 5, there was no significant effect of teaching experience on the perceptions of key personnel and teachers of all instructional leadership dimensions.

**Table 5.** One-way ANOVA results for Instructional Leadership score and teaching experience

Instructional Leadership Dimensions	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Aligning Teaching Practices to School Vision				
Between groups	4	6.348	.674	.610
Within groups	681	9.412		
Leading Curriculum and Teaching				
Between groups	4	3.188	.907	.459
Within groups	681	3.513		
Developing a Positive Climate for Teaching and Learning				
Between groups	4	5.035	.637	.636
Within groups	681	7.905		
Promoting Professional Development				
Between groups	4	7.913	.883	.474
Within groups	681	8.960		
Overall Instructional Leadership				
Between groups	4	82.505	.956	.431
Within groups	681	86.297		

### *Summary*

The descriptive analysis and ANNOVA tests in this section indicate that Singapore school leaders were involved in all investigated dimensions of instructional leadership to varying degrees. These school leaders were involved the least in the area of leading curriculum and teaching. Key personnel tended to rate their school leaders' enactment of instructional leadership higher than

classroom/subject teachers did. The current study found no statistically significant differences in respondents' perception of instructional leadership practices of school leaders with reference to their gender and teaching experience.

***What are the relationships (if any) between instructional leadership and teacher competences?***

To address the second question, the article presents the results from the tests of Pearson correlation and hierarchical regression (Field, 2009). Pearson correlation was calculated between variables on instructional leadership dimensions and teacher competences. All results of instructional leadership dimensions and teacher competences were found to be correlated significantly at  $p < .01$  level (2-tailed), as presented in Table 6.

More specifically, the dimension of 'developing a positive climate for teaching and learning' had the largest correlation with teacher competences. The largest correlation was with 'pedagogical competence' (Pearson's  $r$  value of .46) and followed by "curriculum content competence" (Pearson's  $r$  value of .43).

'Promoting professional development' dimension had the second largest correlation with teacher competences. The largest correlation was with 'pedagogical competence' (Pearson's  $r$  value of .43) and followed by 'curriculum content competence' (Pearson's  $r$  value of .39).

The other two instructional leadership dimensions have weaker correlation with teacher outcomes. 'Aligning teaching practices to school vision' had the weakest correlation of (Pearson's  $r$  value of .20) with 'assessment competence' and (Pearson's  $r$  value of .27) with 'knowledge on student learning'. This was followed closely by 'Leading curriculum and teaching' dimension that had the weakest correlation of (Pearson's  $r$  value of .20) with 'assessment competence' and (Pearson's  $r$  value of .26) with 'knowledge on student learning'.

**Table 6.** Results of Pearson Correlation Matrix of Instructional Leadership (IL) and Teacher Competences

IL dimensions & Teacher Competences	Curriculum Content Competence	Pedagogical Competence	Assessment Competence	Knowledge on Student Learning
Aligning teaching Practices to School Vision	.347**	.365**	.199**	.265**
Leading Curriculum & Teaching	.313**	.349**	.199**	.256**
Developing a Positive Climate for Teaching & Learning	.433**	.457**	.300**	.333**
Promoting Professional Development	.393**	.425**	.295**	.304**

*Note.*  $N = 462$

\*\*Correlation is significant at the level .01 (2-tailed)

To further explore the possible relationships between teacher competences and demographics and instructional leadership, hierarchical regression was used. In the first step, information on gender and teaching experience was entered; four instructional leadership dimensions were entered in the second step.

*Curriculum content competence*

Table 7 presents the results of the regression of 'curriculum content competence' on the independent variable. In the first step, two variables of 'gender' and 'teaching experience' were entered. It was found that these two variables did not significantly predict curriculum content competence. In the second step, four instructional leadership dimensions were added, which explained additional 20.5% of the variance in curriculum content competence. Two instructional leadership variables were found to be significant predictors,  $\beta = .29$ ,  $p < .001$  for 'developing a positive climate for teaching and learning', and  $\beta = .16$ ,  $p = .02$  for 'promoting professional development'.

**Table 7.** Results of Hierarchical Regression of 'Curriculum Content Competence' on Demographics and Instructional Leadership

<i>Predictors</i>		$\beta$	<i>t</i>	<i>Sig.</i>	<i>R</i> <sup>2</sup> Change
1	Gender	-.007	-.154	.878	
	Teaching Experience	.071	1.503	.134	
					.005
2	Gender	-.014	-.334	.738	
	Teaching Experience	.045	1.073	.284	
	Aligning Teaching Practices to School Vision	.105	1.747	.081	
	Leading Curriculum and Teaching	-.056	-.852	.395	
	Developing a Positive Climate for Teaching and Learning	.291	4.663	.000	
	Promoting Professional Development	.158	2.273	.023	
					.205

*Pedagogical competence*

Table 8 presents the results of the regression of 'pedagogical competence' on the independent variable. In the first step, two variables of 'gender' and 'teaching experience' were entered, which explained 3.1% of the variance in pedagogical competence. Only teaching experience was found to be a significant predictor,  $\beta = .18$ ,  $p < .001$ . In the second step, four instructional leadership dimensions were added, which explained additional 22.5% of the variance in pedagogical competence. Two instructional leadership variables were found to be significant predictors,  $\beta = .29$ ,  $p < .001$  for 'developing a positive climate for teaching and learning', and  $\beta = .18$ ,  $p = .008$  for 'promoting professional development'. 'Teaching experience' remained to be a significant predictor in the second step.

**Table 8.** Results of Hierarchical Regression of "Pedagogical Competence" on Demographics and Instructional Leadership

<i>Predictors</i>		$\beta$	$t$	<i>Sig.</i>	$R^2$ Change
1	Gender	-.017	-.360	.719	.031
	Teaching Experience	.177	3.792	.000	
2	Gender	-.023	-.562	.574	.225
	Teaching Experience	.150	3.652	.000	
	Aligning Teaching Practices to School Vision	.083	1.427	.154	
	Leading Curriculum and Teaching	-.022	-.353	.724	
	Developing a Positive Climate for Teaching and Learning	.286	4.725	.000	
	Promoting Professional Development	.179	2.659	.008	

*Assessment competence*

Table 9 presents the results of the regression of 'assessment competence' on the independent variable. In the first step, two variables of 'gender' and 'teaching experience' were entered, which explained 2.3% of the variance in assessment competence. Only 'teaching experience' was found to be a significant predictor,  $\beta = .15$ ,  $p = .001$ . In the second step, four instructional leadership dimensions were added, which explained additional 10.3% of the variance in assessment competence. Two instructional leadership variables were found to be significant predictors,  $\beta = .20$ ,  $p = .003$  for 'developing a positive climate for teaching and learning', and  $\beta = .22$ ,  $p = .003$  for 'promoting professional development'. 'Teaching experience' remained to be a significant predictor in the second step.

**Table 9.** Results of Hierarchical Regression of "Assessment Competence" on Demographics and Instructional Leadership

<i>Predictors</i>		$\beta$	<i>t</i>	<i>Sig.</i>	<i>R</i> <sup>2</sup> Change
1	Gender	-.054	-1.158	.247	
	Teaching Experience	.152	3.248	.001	
					.023
2	Gender	-.063	-1.422	.156	
	Teaching Experience	.138	3.094	.002	
	Aligning Teaching Practices to School Vision	-.015	-.236	.813	
	Leading Curriculum and Teaching	-.080	-1.156	.248	
	Developing a Positive Climate for Teaching and Learning	.197	3.004	.003	
	Promoting Professional Development	.218	2.990	.003	
					.103

### *Knowledge on student learning*

Table 10 presents the results of the regression of 'knowledge on student learning' on the independent variable. In the first step, two variables of 'gender' and 'teaching experience' were entered, which explained 2.4% of the variance in knowledge of student learning. Only teaching



experience was found to be a significant predictor,  $\beta = .16$ ,  $p = .001$ . In the second step, four instructional leadership dimensions were added, which explained additional 11.7% of the variance in knowledge on student learning. ‘Developing a positive climate for teaching and learning’ was found to be a significant predictor,  $\beta = .21$ ,  $p = .001$ . ‘Teaching experience’ remained to be a significant predictor in the second step.

**Table 10.** Results of Hierarchical Regression of “Knowledge on Student Learning” on Demographics and Instructional Leadership

<i>Predictors</i>	$\beta$	<i>t</i>	<i>Sig.</i>	<i>R</i> <sup>2</sup> Change	
1	Gender	-.046	-.988	.324	.024
	Teaching Experience	.156	3.330	.001	
2	Gender	-.050	-1.137	.256	.117
	Teaching Experience	.136	3.086	.002	
	Aligning Teaching Practices to School Vision	.060	.962	.337	
	Leading Curriculum and Teaching	-.009	-.130	.896	
	Developing a Positive Climate for Teaching and Learning	.212	3.262	.001	
	Promoting Professional Development	.117	1.613	.107	

### *Summary*

Generally, there was a correlation between instructional leadership and teacher competences. The hierarchical regression offered a more detailed elaboration of this relationship. The instructional leadership dimensions of ‘developing a positive climate for teaching and learning’ and ‘promoting professional development’ were significant predictors of three dimensions (i.e., curriculum competence, pedagogical competence, and assessment competence) of teacher competences. Noticeably, ‘developing a positive climate for teaching and learning’ was the only significant predictor of teachers’ knowledge on student learning. As for demographic variables, teaching

experience was the only predictor of teacher competences, with an exception of teachers' curriculum competence.

## **Discussion**

The current section continues the article with a discussion on two prominent themes, derived from the statistical results in the preceding section and the relevant literature.

### **Selective approach of instructional leadership**

The current study suggests that Singapore primary school leaders adopted a selective approach of instructional leadership. The 'selective approach' refers to the school leaders' choice to prioritise direct involvement in certain roles of instructional leadership and focus on developing a group of staff. The teacher participants generally perceived that their school leaders got involved in all four examined roles of instructional leadership at their primary schools to varying degrees. One of the key findings is that these school leaders were observed to be the most active in the role of aligning teaching practices to school vision and to be the least engaged in directly leading curriculum and teaching. Some reflections on Singapore and Asian contexts would be helpful in facilitating understanding and interpretation of this key finding.

Singapore education system, similar to some of the others in Asia (e.g., China, Malaysia, and Vietnam), is highly centralised. In these systems, schools have little autonomy to develop their own curriculum; the Ministries of Education develop and pass detailed official curriculum frameworks down to the schools for implementation (Hallinger & Walker, 2017). When it comes to implementation of curriculum and instruction, the instructional leadership roles in Singapore are typically well defined for top school leaders and key personnel (usually middle managers) in the organizational structure. Key personnel are accountable for directly giving suggestions and guidance to classroom and subject teachers' curriculum delivery and school policy implementation

(Koh, Gurr, Drysdale, & Ang, 2011). In addition, Singapore has developed a professional learning community (PLC) initiative in all schools, which encourages teachers to work collaboratively to implement the curriculum (Hairon & Clive, 2012). PLC is led by teachers who are directly involved in interpreting and implementing initiatives on curriculum and instruction. Therefore, it is probable that school leaders are less directly involved in detailed matters of curriculum and instruction.

Regarding issues around organisational visions, Singapore school leaders did have discretion to develop visions and goals for their own schools, though these visions tend to align with the national educational agenda (Hallinger & Walker, 2017; *see also* Ng, 2010). The previous qualitative research (Ng, Nguyen, Wong, & Choy, 2015; Nguyen et al., 2017) has noted that Singapore school leaders took an active role in defining a school vision that highlights their school strengths. This current follow-up quantitative study re-affirms Singapore school leaders' priority in developing school vision, aligning vision to national frameworks, and implementation of vision (*see* Appendix 1 for a sample of questionnaire items used in this study).

The 'selective approach' also pertains to the practice that Singapore school leaders tend to focus on developing key personnel and delegate the responsibilities (e.g., managing classroom instruction and curriculum coordination) of working directly with classroom and subject teachers to key personnel (Ng, Nguyen, Wong, & Choy, 2015; Nguyen, Ng, & Yap, 2017). The process of delegating responsibilities would involve more frequent interactions between school leaders and key personnel. This argument is supported by the finding in this study, as mentioned earlier in the Results section, that teachers with formal leadership position (i.e., key personnel) perceived school leaders' enactment of instructional leadership higher than the teachers without formal leadership position did.

**Leadership focusing on developing teachers and promoting positive climate as significant predictors of teacher competences**

The current study affirms the association between instructional leadership and teacher-level variables at the generic level as documented in a group of empirical studies (e.g., Ham & Kim, 2015; Heck & Moriyama, 2010; Finnigan, 2010). The hierarchical regression in this study further demonstrated that the two instructional leadership dimensions (i.e., developing a positive climate for teaching and learning, and promoting professional development) were significant predictors of teacher competences on curriculum content, pedagogy, and assessment. This reinforces the importance of the leadership that focuses on developing teachers and building and maintaining positive school climate (Hallinger & Murphy, 2013; Heck & Moriyama, 2010; O'Donnel & White, 2005). The items in these two instructional leadership dimensions revealed the direct and indirect pathways through which school leaders were instrumental in developing teacher competences. In the direct pathway, school leaders exercised the practices such as articulating realistic expectations for teachers' instructional quality and directly identifying teachers' needs for development and planning professional activities to enhance their competences. For the indirect pathway, these school leaders took a series of actions, for example, encouraging teacher-led professional activities within the school and providing teachers opportunities to develop their competences outside the school.

Surprisingly, 'developing a positive climate for teaching and learning' was the only dimension that predicted teachers' knowledge on student learning. For this dimension, we aimed at measuring three key leadership practices of school leaders to ensure an orderly and positive school climate, i.e., school physical structure, care for teachers, and encouraging teachers to build relationships with and have deep understanding of their students. Perhaps, the inclusion of the three items concerning the encouragement of teachers to build relationships and have deep understanding of their students made this dimension a unique predictor, as compared with the other three

investigated dimensions, of teachers' knowledge on student learning. These items investigated to which degree the investigated school leaders:

- stressed the importance of respect to encourage student engagement in learning;
- encouraged teachers not to stereotype students in the school; and
- encouraged teachers to build trusting relationships with students.

It should also be noted that these three items were intended to probe how school leaders stimulated and empowered, rather than interfered, teachers in understanding their students and student learning. In other words, it suggests that school leaders' empowering and encouraging leadership practices towards teachers are associated with teacher competence on student learning. This argument corroborates the recent finding of Lee and Nie (2014) that found that teachers' perceptions of the principal's empowering behaviors are directly related to their sense of competence.

## **Conclusions and recommendations**

This current article discusses the issues of instructional leadership that include the enactment of instructional leadership practices of school leaders in Singapore primary schools and the relationships with teacher competences. The final section of this article highlights some recommendations for future research and practice. It is also important to discuss some limitations of the study from which this article has been developed.

First, this study employed a sample of 28 primary schools in Singapore. Future research will be able to enhance the generalisability of the findings by adopting a random sampling of more schools in Singapore primary schools and beyond. It is also helpful to replicate this study beyond the primary school level and in the other societies since educational leadership is subject to the contextual factors such as national culture and school levels (Hallinger, 2018). Undertaking such

empirical studies across school levels and societies would be useful in establishing a stronger international and comparative knowledge base on the effects of instructional leadership at teacher level.

Second, this study focused on investigating two constructs of instructional leadership and teacher competence. Each construct has four dimensions. Although these are arguably key dimensions of each construct, future studies could expand further dimensions to gain a broader understanding of these two constructs and their relationships. In addition, it is recommended that subsequent research further specify the relationships between instructional leadership and other teacher-level variables (e.g., organisational commitment, job satisfaction, professional goals, and organisational citizenship behaviour) across school contexts and societies to reach firm conclusions on the impacts of instructional leadership on teachers and student learning.

Third, teachers in this study rated their senior school leaders' instructional leadership practices and self-rated their professional competences. For verification, future studies may consider investigating relationships between instructional leadership and teacher competences, from the perspectives of middle leaders who directly work with their senior school leaders and subject/classroom teachers.

Fourth, the nature of this study only allows an inference of correlational relationships among the investigated variables of instructional leadership and teacher competences. Having said that, teasing out these predictive relationships offers important implications for subsequent studies on the effects of instructional leadership. Perhaps future research should consider alternative study designs (e.g., longitudinal and/or experimental studies) to better understand the effects of instructional leadership on teacher-level variables.

Alongside suggestions for future research, the design and analysis of this study supports three main recommendations for school leaders. The statistical results in this study indicate that

teacher competences are significantly related to the school leaders' focus on promoting teacher professional development and positive school climate. Therefore the first recommendation is that school leaders prioritise their time on creating opportunities and conditions for teachers' professional development that are built on teacher and school needs. This also involves articulating expectations and encouragements for teachers in terms of continuous learning and teaching improvements.

The article provides the evidence that aligning teaching practices to school vision appeared to be the core practice of instructional leadership in Singapore because school leaders were reported to perform this dimension most frequently. Nevertheless, this practice seemed not to have the strongest effects on teacher competences that are linked to instructional quality (Dekker-Groen et al., 2013; Hattie, 2009; Kleickmann et al., 2013). For clarification, this is not to imply that Singapore school leaders should make fewer efforts on this practice, since it may contribute to improved student learning through the other pathways (Hallinger & Murphy, 2013).

The finding that teaching experience was a significant predictor of three out of four dimensions of teacher competence reinforces the perception that experienced teachers seem to have stronger knowledge on pedagogy, assessment, and student learning, as compared with junior colleagues. Perhaps it is helpful that school leaders encourage these experienced teachers to mentor novice teachers in both formal and informal ways. Indeed, Nguyen et al. (2017) claimed that instructional leadership in Singapore happens both in a structured and non-structured way. The non-structured instructional leadership occurs when teachers mentor one another other with instructional matters.

In summary, the article provides both a confirmation of previous works and new contributions to the literature around instructional leadership. It highlights the empirical evidence from Singapore primary schools on how school leaders enacted instructional leadership. The

teacher participants perceived that their school leaders chose to invest more efforts in aligning teaching practices to school vision and promoting teacher professional development activities and a positive school climate, whereas they were less active in directly leading classroom instruction and curriculum. While the article confirms the international literature on the positive relationship between instructional leadership and teacher-level variables (e.g., Ham & Kim, 2015; Heck & Moriyama, 2010), its new contribution lies in further specifying this relationship using empirical evidence.

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## Appendix 1. Sample of Items of Instructional Leadership Scale

For each of the following questions, please respond according to **perceptions of YOUR School**

**Leaders' Instructional Leadership practices in school.** Please rate the extent to which you agree with the following statements using the scale below by choosing a response to each statement.

No.	My School Leaders ...	Your Rating				
		Strongly disagree		Strongly agree		
1.	... ensure staff clearly understand the school's vision in order to teach effectively.	1	2	3	4	5
2.	... ensure that the school vision is aligned to the Ministry's key policies and initiatives.	1	2	3	4	5
3.	... involve staff in developing the school's vision for teaching and learning.	1	2	3	4	5

No.	My School Leaders ...	Your Rating				
		Strongly disagree		Strongly agree		
1.	... use data (e.g., student achievement data and quality of student work) to evaluate teaching and learning.	1	2	3	4	5
2.	... regularly conduct walkabouts to observe classroom activities.	1	2	3	4	5
3.	... provide feedback to staff after formal classroom observations.	1	2	3	4	5

No.	My School Leaders ...	Your Rating				
		Strongly disagree		Strongly agree		
1.	... stress on the importance of respect to encourage students' participation in learning.	1	2	3	4	5
2.	... set realistic expectations of achievement for staff and students.	1	2	3	4	5
3.	... always encourage staff to build trusting relationships with their students.	1	2	3	4	5

No.	My School Leaders ...	Your Rating				
		Strongly disagree		Strongly agree		
1.	... provide developmental opportunities for staff through networking with others outside the school.	1	2	3	4	5
2.	... expect all staff to actively participate in PD (e.g. PLCs).	1	2	3	4	5
3.	... encourage teacher-led PD amongst staff.	1	2	3	4	5