

'Are Principals Instructional Leaders Yet?'

A Science Map of the Knowledge Base on Instructional Leadership, 1940-2018

Philip Hallinger

Mahidol University

University of Johannesburg

hallinger@gmail.com

<https://orcid.org/0000-0002-5935-7544>

Sedat Gümüş¹

Aarhus University, Denmark,

gumussed@gmail.com

<https://orcid.org/0000-0003-0453-3341>

Mehmet Şükrü Bellibaş

Adıyaman University, Turkey,

msbellibas@gmail.com

<https://orcid.org/0000-0003-1281-4493>

Abstract

In the 1980s when research on effective schools surfaced the importance of 'instructional leadership in the United States, skeptics who wondered if this would be just another educational fad. Yet, 40 years later, the expectation for school principals to be 'instructional leaders' has become ubiquitous throughout much of the world. This systematic review of research used science mapping to gain insights into the growth, geographic distribution, key documents and authors, and topics in this literature. The authors used a variety of quantitative bibliometric analyses to examine 1,206 Scopus-indexed journal articles on instructional leadership published between 1940 and 2018. The results affirm that the knowledge base on instructional leadership has not only increased in size, but also geographic scope. Contrary to expectations during the 1980s, instructional leadership has demonstrated remarkable staying power, growing into one of the most powerful metaphors guiding research, policy and practice in school leadership. Despite this finding, both author co-citation and co-word analyses revealed the emergence of 'integrated models of school leadership' in which instructional leadership is enacted in concert with dimensions drawn from complementary leadership approaches. Key themes in the recent literature include studies of leadership effects on teachers and students, contexts for leadership practice, and means of developing instructional leaders.

Introduction

The roots of the literature on principal instructional leadership can be traced back to mid-20th century America, where articles published in the *NASSP Bulletin* exhorted principals to be 'instructional leaders' rather than just 'administrators' (Corey Wellesley Foshay and Mackenzie 1951; Spears 1941; Willey 1942). From the outset, however, this practitioner literature was infused with tension between the espoused role of what principals *should* do and contrasting descriptions of actual principal practice (Bagby 1972; Bridges 1967; Weldy 1979). Even during the 1980s when the pressure for principals to 'be instructional leaders' received a boost from the effective schools movement (Bossert Dwyer Rowan and Lee 1982; Edmonds 1979; Hallinger and Murphy 1985), some scholars remained skeptical. For example, Larry Cuban, a Stanford University professor and former school superintendent, famously asked, 'Have principals become instructional leaders yet?' (Author 2015). Cuban's (1988) skepticism arose from his belief that the 'DNA' of the principalship would always push principals away from the classroom and towards their political and managerial roles. Bridges (1967 1982) also noted that both the lack of sound conceptual models and an absence of solid empirical evidence on the impact of this role were at odds with the prescription for

¹ Corresponding author. Address: Jens Chr. Skous Vej 4, building 1483_426, 8000 Aarhus C, Denmark

principals to ‘be instructional leaders’. Notably, this role was a uniquely American phenomenon that did not appear to have a significant foothold in either scholarship or professional practice beyond the USA.

Fast forward to the 21st century and the role configuration of school leaders has changed throughout the world. The ‘global’ education accountability movement, launched around the turn of the millennium, rewrote the goals of education systems and established student achievement as the key criterion for assessing educational effectiveness (Leithwood 2001; O’Donnell and White 2005). Within this context, instructional leadership reemerged as a school leadership model with relevance not only in the USA, but also the United Kingdom (Day 2009; Hopkins 2013; Southworth 2002), Europe (Krüger Witziers and Slegers 2007; Scheerens 2012), Asia (Harris et al. 2013; Qian and Walker 2013; Walker and Hallinger 2015), Africa (Bush 2013), and Latin America (Fromm et al. 2017).

In this article, the authors used science mapping to conduct a review of research aimed at illuminating the evolution of global scholarship on instructional leadership. We believe the intellectual journey which describes changing perspectives on instructional leadership over the past 80 years holds lessons not only for our understanding of this construct, but also for the broader field of educational leadership. The review addressed the following research questions:

- RQ1: What is the volume, growth trajectory, and geographic distribution of the journal literature on instructional leadership published between 1940 and 2018?
- RQ2: What documents in the literature on instructional leadership have evidenced the greatest impact on scholarly discourse?
- RQ3: What is the intellectual structure of the knowledge base on instructional leadership?
- RQ4: What topical foci related to instructional leadership have attracted the greatest attention from scholars and what is the ‘research front’ in this domain?

In this review, the authors analyzed bibliographic data associated with 1,206 Scopus-indexed journal articles related to instructional leadership. We used bibliometric research methods (White and McCain 1998; Zupic and Čater 2015) to document trends, as well as to analyze citation impact, and uncover the intellectual structure of this knowledge base. This review extends findings reported in past bibliometric reviews of research on instructional leadership (Author 2011; Boyce and Bowers 2018).

Reviews of Research on Instructional Leadership

Bossert and colleagues (1982) published the first systematic review of research on instructional leadership. Employing research synthesis they examined not only studies of principal instructional leadership, but also research concerned with school organization, teaching and learning. Their review brought conceptual clarity to the instructional leadership role and yielded the Far West Lab Principal Instructional Management Framework. This conceptual framework proposed a comprehensive model of how principal instructional leadership influences student learning outcomes. This was the first conceptual model to incorporate theoretically justified moderators of principal instructional leadership (e.g., personal characteristics, community context), as well as mediators (i.e., instructional climate, instructional organization) of its hypothesized impact on student learning. This model reoriented subsequent empirical research by conceptualizing instructional leadership effects on learning as an indirect or mediated process.

Concurrently, Hallinger developed the *Principal Instructional Management Rating Scale* (PIMRS) and associated PIMRS framework (Hallinger and Murphy 1985). Development of these ‘research tools’ set the stage for a decades-long program of research on instructional leadership (Hallinger 2011; Hallinger and Heck 1996 1998). The impact of these conceptual and methodological developments during the 1980s would become evident during subsequent decades when scholars published the first quantitative reviews of research on school leadership effects (e.g., Hallinger and Heck 1996; Robinson Lloyd and Rowe 2008; Scheerens 2012; Witziers Bosker and Kruger 2003).

Hallinger and Heck (1996) were the first scholars to explicitly synthesize data that linked principal leadership and student achievement. Their review of research offered a set of empirically grounded conclusions that supported a positive relationship between instructional leadership and student learning. Nonetheless, consistent with the Far West Lab model (Bossert et al. 1982), they also concluded that ‘leadership effects on learning’ were mediated by other school levels factors (e.g., teacher practices, instructional organization) and recommended that future research explore these ‘paths’.

During the 2000s, Witziers and colleagues (2003), Robinson and colleagues (2008) and Scheerens (2012) employed meta-analysis to further unpack the relationship between leadership and student learning. While their conclusions varied, this body of work continued to focus attention on instructional leadership as an important role of school leaders. Leithwood and colleagues (2008) and Louis et al. (2010) used research synthesis to examine how leadership was linked to student learning. Their reviews were neither bound by reliance on a particular conceptual model of leadership nor by the constraints of meta-analytic methodology. Thus, even while their reviews reaffirmed the importance of instructional leadership, they also highlighted other dimensions of leadership that were required to support effective teaching and learning. For example, Leithwood and colleagues highlighted the emotional dimensions of leadership as well as the need to engage parents actively in support of student learning both at home and in schools (see Leithwood Patten and Jantzi 2010; Louis et al. 2010).

Complementing these reviews were two others that employed bibliometric methods to examine the knowledge base on instructional leadership (Boyce and Bowers 2018; Hallinger 2011). Hallinger (2011) used bibliometric methods to analyze conceptual models, research methods, and topics used in 130 doctoral dissertations that had used the PIMRS instrument to study principal instructional leadership between 1983 and 2010. He concluded that dissertations completed since 2000 had shifted towards the more frequent use of ‘mediated effects models’ and associated statistical tests to study the relationship between leadership and learning. With respect to topical foci, he reported that leadership effects studies tended to focus on teacher attitudes (e.g., satisfaction, morale) and practices (8%), school climate (8%), student achievement (18%), and principal and school effectiveness (17%).

Boyce and Bowers (2018) used meta-narrative review to analyze 109 studies conducted between 1988 and 2013. They identified teacher satisfaction, teacher commitment, and teacher retention as the most frequently studied topics in relation to instructional leadership. Moreover, consistent with a trend first reported by Leithwood and colleagues in 2008, they concluded that this literature was moving from a narrow focus on ‘instructional leadership’ towards broader conceptualizations of ‘leadership for learning’. The current bibliometric review was designed to extend this lineage of reviews of research on instructional leadership.

Method

This review employed science mapping to synthesize features of the knowledge base on instructional leadership (Chen and Chen 2003; Zupic and Čater 2015). Bibliometric tools enable science mapping reviews to analyze large numbers of documents extracted from a database (Author 2018 2019). Consistent with other forms of systematic review, science mapping makes explicit the procedures used in the identification of studies, as well as data analysis.

Identification of sources

Prior reviews had established that Scopus offers more comprehensive coverage of educational administration journals than the Web of Science (Author 2019). Moreover, unlike Google Scholar, Scopus also provides access to comprehensive bibliographic data used in bibliometric analysis (van Eck and Waltman 2014). Therefore, Scopus was selected as the source of documents for this review.

Next we established the timeframe, source type and topical focus of the review. Based on an initial scan of the literature we set the start date at 1940 and continued up to the end of 2018. Consistent with other reviews of research in educational administration (e.g., Hallinger and Heck 1996), we decided to limit this review to journal articles in the belief that they are subject to more consistent peer-review and represent the most significant contributions to this literature.

In determining the topical scope of the review, we drew upon a conceptual definition of instructional leadership developed by Hallinger and Murphy (1985), and which has been used in more than 500 empirical studies (Hallinger and Wang 2015). We defined instructional leadership as ‘school leadership intended to influence school and classroom teaching and learning processes with the goal of improving learning for all students’. Notably, although our conceptual definition did not presume a particular role (e.g., principal), it grounded instructional leadership in a concern for student learning outcomes (Bridges 1967 1982; Hallinger and Murphy 1985). This definition would enable us to capture relevant documents while offering a sound basis for excluding papers based on conceptually distinct models such as transformational leadership (Geijsel Slegers Leithwood and Jantzi 2003; Leithwood 1992) or integrated leadership (e.g., Boberg and Bourgeois 2016; Leithwood et al. 2010; Printy Marks and Bowers 2009).

We followed PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) guidelines for conducting systematic reviews of research (Moher Liberati Tetzlaff and Altman 2009) to guide the identification of documents (see Figure 1). We began by experimenting with several distinct combinations of search terms that included ‘instructional leadership’, ‘instructional management’, ‘leadership for learning’ and ‘learning centered leadership’. Finally, we arrived at the following keyword string.

TITLE-ABS-KEY "instructional leader*" OR "instructional manage*" OR "leadership for learning" OR "learning centered leadership" OR "learning-centered leadership" OR "learning focused leadership" OR "learning-focused leadership" OR "leadership of learning" OR "achievement-directed leadership" OR "achievement directed leadership" OR "pedagogical leadership" OR "pedagogical leader*" OR "pedagogic leadership" OR "pedagogic leader*")

Use of this keyword string produced a list consisting of 1,131 Scopus-indexed documents published between 1941 and 2018. After excluding editorials, book chapters, conference proceedings, notes and letters, 946 journal articles remained. Beyond inclusion in the Scopus index, there was no limitation on the journals in which the articles had been published. Screening by two researchers led to the further removal of 210 articles that did not meet our conceptual definition of instructional leadership. The seemingly large proportion of ‘ineligible documents’ resulted from limitations of the Scopus search engine. We have found that Scopus often produces unreliable results when conducting keyword searches. This left a database of 736 eligible articles in our Scopus list (see Figure 1).

Insert Figure 1 here

When reviewing this list, the authors further noted that the Scopus search had also missed potentially relevant documents with which we were familiar. Thus, we decided to conduct a confirmatory search for relevant documents in Google Scholar (GS) which produces a more comprehensive list. It should be noted that the purpose of this supplementary search was not to develop a second database. GS does not have the capability to export bibliographic data in a format compatible with our analytical software. Thus, the purpose of the GS search was simply to identify additional relevant articles that may have been missed by the Scopus search engine.

The procedural sequence for the supplementary GS search was to generate the search, and then screen for document topical eligibility. If eligible, we checked if the document was included in Scopus. If yes, we then checked whether it was a 'duplicate' of a document already in our list. If not, we added the document to our Scopus list. Since this was intended as a broad search for potentially relevant but ‘omitted documents’ we used a single keyword ‘instructional leadership’. The GS search yielded an additional 470 Scopus-indexed articles (see Figure 1). When added to our list, this resulted in a final database of 1,206 articles. Again, we emphasize that the need for this rather elaborate search procedure resulted from the lack of precision of the Scopus search engine. Nonetheless, we believe that the resulting document database fulfilled our goal of identifying the full Scopus-indexed literature on ‘instructional leadership’.

Data analysis

Bibliographic meta-data associated with the 1,206 articles were exported and saved in an Excel file for use in bibliometric analyses. Analyses of journal distribution, growth trajectory, and geographic distribution of documents were conducted using Scopus analytical tools. Scopus uses the country location of the first author to identify the geographic location of a document. Thus, this metric is not always synonymous with the location in which an empirical study was conducted, nor does it capture the full geographic distribution of scholars for co-authored articles.

Citation analysis is widely used as a means of establishing the scholarly influence of authors, research documents and journals (Small 1973; White and McCain 1998; Zupic and Čater 2015). Traditional document citation analysis calculates the number of times a document has been cited by other documents located in the index from which it was extracted (e.g., Scopus, Web of Science, Google Scholar). Co-citation analysis emerged as a variant of traditional citation analysis. Small (1973) defined co-citation as the frequency with which two units (e.g., two authors, two documents, or two journals) are cited together. Co-citation analysis calculates the number of times references cited in the review documents have been cited together, or co-cited. For example, if Fullan (2007) and Heck, Larsen and Marcoulides (1990) both appear in the reference list of Robinson et al.’s (2008) review of research (i.e., a document located in our database), then the Fullan (2007) and Heck et al. (1990) documents each accrue one

'co-citation'. Since co-citation analysis is based on 'cited references' rather than citations of documents in the reviewer's database, it has the potential to capture additional relevant documents in the broader literature (van Eck and Waltman 2014).

Co-citation analysis is used to reveal the social networks that evolve among scholars publishing within a literature (White and McCain 1998). VOSviewer software produces an author co-citation map capable of visualizing relationships among authors within a literature based on their patterns of co-citation by other scholars (van Eck and Waltman 2014). Authors who are frequently co-cited are assumed to share an intellectual affinity (Small 1973). Thus, author co-citation maps have been used to analyze the 'intellectual structure' of various disciplines and lines of inquiry (Chen and Chen 2003; White and McCain 1998; Zupic and Čater 2015).

Keyword co-occurrence analysis, also known as co-word analysis, was conducted in VOSviewer in order to identify analyze topics and themes studied in the literature on instructional leadership (van Eck and Waltman 2014). In a manner similar to co-citation analysis, co-word analysis examines patterns of 'co-occurrence' of keywords in the titles, keywords, and abstracts of the review documents. We conducted co-word analysis in two steps.

First, we used co-word analysis to identify the most frequently occurring keywords in our Scopus-indexed database on instructional leadership. In a second step, we conducted 'temporal co-word analysis' in order to identify the 'research front' (Price, 1965) or topics of recent interest among scholars. When conducting this analysis VOSviewer examines the time distribution (i.e., years of publication) among the occurrences of each keyword. For example, in step one, co-word analysis identified 69 occurrences of the keyword 'teacher learning' in the document database. In temporal co-word analysis, VOSviewer further examined the publication dates of the 69 documents in which 'teacher learning' had been included, yielding a time distribution for each keyword. This analysis yields a temporal co-word map which shows the frequency, co-occurrence relationship, and time period in which different keywords have been most popular.

When conducting co-word (or co-citation) analysis, the researcher must select a threshold in VOSviewer for the minimum number of co-occurrences (or co-citations) on which to base the analysis. If, for example, the researcher sets the co-word threshold at '10', the software will generate a map showing all keywords that evidenced 10 or more co-occurrences in the titles, abstracts, and keywords of documents in the review database. Thus, setting a lower threshold yields a map containing a larger number of more keywords. There is no standard setting for the threshold in either co-citation or co-word analysis (van Eck and Waltman 2014). Instead the researcher will typically generate maps based on different thresholds, and draw upon tacit knowledge of the field to select a map that offers the most coherent and meaningful visualization of the knowledge base (Chen and Chen 2003; van Eck and Waltman 2014).

Results

In this section of the paper we present the findings in relation to each of the four research questions.

Landscape of the literature on instructional leadership

Our first research question inquired into the size, growth trajectory and geographical distribution of the instructional leadership literature. The database of 1,206 documents represents a moderate, but growing corpus of research on instructional leadership. These studies were published in 241 journals focusing on educational leadership, educational policy and general education. The journals publishing most frequently on this topic were *NASSP Bulletin* (131 articles), *Journal of Educational Administration* (98), *Educational Administration Quarterly* (92), *School Leadership & Management* (66), and *Educational Management, Administration & Leadership* (48).

As indicated in Figure 2, the growth trajectory of this literature was quite low and flat from the 1940s up until the 1980s. Publication of Edmond's seminal article, "Effective Schools for the Urban Poor" in 1979 placed an international spotlight on the principal's role as an instructional leader (Bossert et al. 1982). Edmonds (1979) asserted that instructionally effective schools were led by principals who forged a clear academic mission, assumed responsibility for instructional leadership and held themselves accountable for results.

Insert Figure 2

Shortly thereafter, publication of *A Nation at Risk* (National Commission on Excellence in Education 1983) in the USA prompted a search for policy-ready solutions capable of jump-starting educational reform. Within this new policy context, Edmonds' (1979) findings on the importance of instructional leadership found a ready audience. This

led, for example, to the establishment of Principal Leadership Academies throughout the USA with the charge to transform principals into instructional leaders (Barth 1986; Murphy 1990). The impact of these developments become evident in an uptick in the number of publications on instructional leadership (see Figure 2).

However, a decade hence, the emergence of policies supporting teacher professionalization and school restructuring signaled a shift towards leadership models that were perceived as more consistent with these new policy aims. Thus, from 1995 to 2005, transformational leadership (Leithwood 1992 1994) and then distributed leadership (Gronn 2000; Spillane et al. 2001) eclipsed instructional leadership. Advocates of these leadership models critiqued tendencies in the instructional leadership literature to focus on ‘the principal’ as the source of leadership for learning, and to emphasize a ‘top-down’ approach to school improvement (Barth 2001; Leithwood 1994).

While interest in instructional leadership never disappeared, two developments caused scholars to return to this conceptualization of school leadership during the mid-2000s (see Figure 2). First, the emergence of a global accountability movement led to renewed calls for ‘instructional leadership’ capable of bringing about more reliable improvement in student achievement (Leithwood, 2001). While this led to a revival of interest in instructional leadership in the USA, it was a completely new trend in most other nations where principals had previously been viewed as ‘managers’ and ‘administrators’ of national policies. Second, a complementary series of research reviews presented convincing empirical evidence that supported the efficacy of ‘instructional leadership’ in efforts to improve student learning (Hallinger and Heck 1996; Leithwood Harris and Hopkins 2008; Robinson et al. 2008).

By the late 2000s scholars began to re-conceptualize instructional leadership somewhat more broadly as ‘leadership for learning’. This was evident in the emergence of ‘shared instructional leadership’ (Marks and Printy 2003), ‘teacher leadership’ (York-Barr and Duke 2004), ‘leadership for learning’ (MacBeath and Dempster 2008; Murphy et al. 2007) ‘learning-centered leadership’ (Goldring et al. 2009; Murphy et al. 2007), ‘distributed leadership for instruction’ (Spillane Diamond and Jita 2003), ‘learning-focused leadership’ (Knapp et al. 2010), and ‘integrated leadership’ (Boyce and Bowers 2018; Leithwood et al. 2010; Printy Marks and Bowers 2009). These models all reframed instructional leadership as a distributed process focused student learning, but which also designs the school organization for success, and builds the capacity and commitment of teachers.

Insert Figure 3

The heat map in Figure 3 displays the global distribution of the literature on instructional leadership. Consistent with the broader knowledge base in educational administration (Author 2019), 75% of this literature was authored in the USA (673 articles), the United Kingdom (65), Australia (61), continental Europe (55) and Canada (49). This means that 25% of the studies (303) were authored in Asia, Africa and Latin America. Despite this perceived imbalance in the instructional leadership literature, longitudinal analysis revealed an interesting trend. Specifically, 90% of the articles authored outside of the USA, Europe and Australia were published since 2005 (e.g., Bush 2013; Fromm et al. 2017; Mestry et al. 2013; Qian and Walker 2013; Walker and Hallinger 2015). Thus, despite the continuing influence of American scholarship, these trends highlight the increasing global relevance of instructional leadership.

Influential documents in the instructional leadership literature

We employed both document citation (not tabled) and co-citation analysis (see Table 1) to identify the most influential research papers in this literature. Although there was considerable overlap (50%) between the two lists, these different approaches highlighted complementary contributions. Based on its analysis of the reference lists in the review documents, co-citation analysis identified several influential papers that had been omitted from our database based on topical eligibility (e.g., Fullan 2007; Leithwood et al. 2010; Spillane 2006). In other cases, highly co-cited documents had been published in journals that were not included in Scopus (e.g., Hallinger 2003 2005; Hallinger and Murphy 1985).

The list of ‘highly co-cited documents’ in Table 1 provides a succinct reading list that traces the historical lineage of theory and research on instructional leadership. The list identifies documents that provided the conceptual and methodological foundations for this knowledge base as it emerged during the 1980s (i.e., Bossert et al. 1982; Edmonds 1979; Hallinger and Murphy 1985) and matured in subsequent decades (Hallinger and Heck 1996 1998; Robinson et al. 2008; Spillane 2006; Spillane et al. 2001). Additional documents of note identified through ‘citation analysis’ (not tabled) included several empirical studies that represented the state-of-the-art at different points in time (e.g., Coburn 2005; Copland 2003; Hallinger Bickman and Davis 1996; Hallinger and Heck, 2010; Heck et al. 1990).

Insert Table 1

Not surprisingly, the highest impact documents in this literature included reviews of research that consolidated and extended collective understanding of this literature's evolution at different points in time. As suggested earlier, the Bossert et al. review (1982) stimulated scholars to move from bi-variate to multi-variate studies of the effects of instructional leadership. This shift in empirical research was documented in Hallinger and Heck's (1996 1998) reviews which also documented empirically the superiority of 'indirect effects' models of leadership impact. The consequences of these findings on the next generation of instructional leadership studies was documented in subsequent reviews that both consolidated and further advanced this literature during the 2000s (e.g., Hallinger 2011; Leithwood et al. 2008; Louis et al. 2008; Robinson et al. 2008; Witziers et al. 2003). Thus, these results highlight the contribution that reviews of research make to the long-term development programmatic research and accumulation of knowledge.

The highest impact document in this literature is Robinson et al.'s (2008) meta-analytic review of school leadership effects. The significance of this review lies in three related findings. First, using meta-analytical methods, the review reaffirmed Hallinger and Heck's (1996 1998) conclusion that school leadership makes a positive contribution to student learning. Second, Robinson and colleagues (2008) offered empirical evidence that instructional leadership yielded stronger effects on student learning than 'competing' leadership models (e.g., strategic and transformational leadership). Finally, the review highlighted the relative contributions of specific dimensions of instructional leadership to student learning. Thus, for example, they identified principal participation in and support for teacher professional learning as the strongest 'path' through which principals influenced student learning. This finding supported an emerging line of empirical inquiry that explores how instructional leaders contribute to teacher learning and development as a 'path' towards improving student learning (e.g., Printy 2008; Wang 2016).

Intellectual structure of the instructional leadership literature

We next used author co-citation analysis to examine the 'intellectual structure' of this knowledge base. Intellectual structure refers to the self-organized research traditions and lines of inquiry that emerge within a knowledge base over time (White and McCain 1998; Zupic and Čater 2015). The author co-citation network was comprised of 27,667 authors identified from the reference lists of documents in our review database. We set a minimum threshold 20 author co-citations in VOSviewer, which displayed a map containing the 130 most highly co-cited authors in this literature (see Figure 4).

Insert Figure 4

When interpreting an author co-citation map, the size of a node reflects the relative frequency of an author's co-citations. Intellectual relationships among scholars are revealed by the proximity of nodes as well as the 'links' that connect them. Nodes are color coded in order to highlight clusters of scholars whose co-citation patterns suggest a high degree of affinity in theoretical perspective or lines of empirical inquiry (Chen and Chen 2003; White and McCain 1998; Zupic and Čater 2015). In science mapping, these clusters are interpreted as 'Schools of Thought' which together comprise a knowledge base.

The author co-citation map in Figure 4 reveals Schools of Thought of varying degrees of 'coherence'. While some clusters are largely self-contained (e.g., green and red clusters), others (e.g., yellow, purple, blue) include authors whose scholarship also demonstrates intellectual affinity with scholars located in other Schools (see Murphy, Leithwood, Robinson, Rowan).

The central position on the map is occupied by a School of Thought comprised of authors whose scholarship has focused explicitly on 'Instructional Leadership'. Led by Hallinger (2,117 co-citations), Heck (906), and Rowan (358), the DNA of this School is associated with early scholarship that defined and developed empirical descriptions of instructional leadership (e.g., Bamburg and Andrews 1991; Bossert et al. 1982; Bridges 1967; Dwyer 1984; Edmonds 1979; Hallinger and Murphy 1985). A key building block of the scholarship of this School has been the PIMRS model and associated instrument which has been used in over 500 empirical studies (Fromm et al. 2017; Hallinger and Murphy 1985; Hallinger and Wang 2015; O'Donnell and White 2005). This School encompasses the core body of empirical studies that have elaborated on patterns and effects of instructional leadership enactment in practice (e.g., Author 2010; Dwyer 1984; Hallinger Bickman and Davis 1996; Hallinger and Murphy 1985; Heck et al. 1990; Krüger, Witziers, and Slegers 2007).

The green cluster represents a School of Thought associated with scholars known for research on School Improvement Leadership. Led by Harris (637 co-citations), Day (377), Walker (367), and Hopkins (328), scholarship within this School has elaborated how school leaders contribute to school improvement and effectiveness (Harris 2004; Hopkins, 2013). A key contribution of this School has been the elaboration of a longitudinal perspective towards the changing nature of leadership and leadership effects on school improvement over time (Day 2009; Gurr, Drysdale and Mulford 2010; Sammons, Davis, Day and Gu 2014).

The purple cluster at the top of the map represents a School of Integrated Leadership led by Leithwood (1,900 co-citations), Jantzi (528), and Hoy (340). This School has benefitted from a 25 year-long program of research launched by Leithwood on transformational school leadership (Leithwood 1992, 1994). He was joined by others in subsequent years, and continuing to the present (Geijsel et al. 2003; Leithwood et al. 2010; Leithwood and Sun 2018). While the genealogy of this School traces back to the transformational leadership model (e.g., see Bass and Avolio in this cluster), over time this School evolved in response to research findings that highlighted the importance of 'instructional leadership' for student learning outcomes (e.g., Hallinger and Heck 1996 1998; Robinson et al. 2008). Thus, scholars within this School began to include an instructional leadership component in new 'integrated models' of school leadership (Boberg and Bourgeois, 2016; Goddard et al. 2015; Hoy and Hoy 2006; Leithwood et al. 2010; Marks and Printy 2003; Murphy et al. 2007). For example, Leithwood et al. (2010) conceptualized an 'integrated model' of school leadership that incorporated dimensions of 'instructional leadership' and 'transformational leadership'. This 'four-path model' conceptualized school leaders impacting student learning through rational, emotional, organizational, and family paths.

The red cluster represents a School of Thought focused on Leadership for Teacher Change. Led by Spillane (813 co-citations), Louis (713), Fullan (493), Blasé (427), Bryk (369), and Marks (329), scholarship in this School is often grounded in instructional leadership that is shared with teachers and other school leaders (e.g., Spillane 2006; Spillane et al. 2001). Moreover, this School tends to focus more centrally on the link between leadership and teachers (e.g., Blasé and Blasé 2000; Darling-Hammond 2003) and how leadership influences change in teacher practice (e.g., Fullan 2007; Fullan and Miles 1992).

The yellow cluster, led by Murphy (910 co-citations), Goldring (353), Wahlstrom (346), and Robinson (345) consists of authors associated with Leadership for Learning. One line of inquiry within this School has been associated with efforts to develop the VAL-ED model of leadership for learning. This has resulted in an extended series of papers documenting the development of the model of instructional leadership (Murphy et al. 2007) and associated instrument (Goldring et al. 2009) for use in principal evaluation. A second line of inquiry has focused on examining how instructional leaders influence teacher practices (Grissom et al. 2013; Sebastian and Allensworth 2012; Supovitz et al. 2010; Wahlstrom and Louis 2008).

When stepping back and viewing the map as a whole several other notable features emerge. First, when compared with other maps of related literature in educational leadership and management (Author, 2018, 2019), the Schools of Thought on this map are somewhat less coherent and evidence more crossing over of scholars into the boundaries between the clusters (see Murphy, Robinson, Gronn, Marks, Rowan). This reaffirms a pattern of increasing integration in the scholarship of authors writing on 'instructional leadership' and related models of leadership for learning (Boyce and Bowers 2018). Another signal feature of the map is indicated by the central location and large nodes associated with of Hallinger, Leithwood and Heck, whose dense links to all five Schools highlights their influence in the evolution of this literature.

Topical foci of the instructional leadership literature

Co-word analysis was next used to analyze topical themes in this literature. The most frequent occurring keywords in our document database were school leadership (252 occurrences), instructional leadership (182), principal (147), teacher learning (69), school management (55), school improvement (44), student achievement (40), distributed leadership (33), change (29), teacher leadership (29), leadership for learning (28), teachers (25), accountability (24), education policy (21), teacher evaluation (20), learning (19), education reform (18), pedagogical leadership (18), and transformational leadership (15). These keywords highlight models of school leadership, sources of instructional leadership, features of the context in which leadership is enacted and the range of leadership effects studied in this literature.

Insert Figure 5

Next, a temporal co-word map was generated in order to identify the 'research front' (Price 1965) in the instructional leadership literature. The co-word map in Figure 5 highlights the relative 'frequency' (size of node) and

'recency' (i.e., yellow and bright green/lightest shades) of topics based on temporal analysis of their occurrence in the review documents. As noted earlier in the Method section, temporal co-word analysis creates a 'distribution of dates' for each keyword in order to determine the time period in which the topic attracted the greatest interest. However, because most of this literature has been published since 2000 (see Figure 2), all of the keyword distributions are 'pushed forward' in time. Thus, the dates on the temporal map are keyed to the most recent decade. We grouped the recently occurring keywords (yellow/light shade) into topical themes, and then rank ordered these by the total occurrences of the composite keywords. This synthesis yielded the following themes in rank order.

1. *Leadership for learning models and practices* (instructional leadership, leadership for learning, data use, teacher evaluation);
2. *Leadership and teacher learning* (professional learning community, teacher education, teacher learning, teacher professional development, coaching, teacher development);
3. *Leadership effects on teacher attitudes and practices* (trust, self-efficacy, agency, motivation, instruction, teacher learning, teaching practices, teaching and learning);
4. *Contexts for instructional leadership* (e.g., education policy, China, Asia, Taiwan, Singapore, urban education);
5. *Developing instructional leaders* (e.g., leadership development, leadership preparation, principal preparation, coaching, feedback);
6. *Leadership effects on schools* (student outcomes, school effectiveness, school climate);
7. *Research methods in instructional leadership* (e.g., qualitative methods, structural equation modeling, action research).

These themes highlight trends in recent research on instructional leadership. The patterns revealed in this map offer further support for the conclusion that instructional leadership literature is moving towards the adoption of integrated models (e.g., Boberg and Bourgeois, 2016; Boyce and Bower 2018; Murphy et al. 2007; Neumerski 2013; Printy et al. 2009). This further suggests that instructional leadership should not be viewed as the preeminent form of school leadership, but rather as one essential component of effective school leadership.

The recent focus on leadership and teacher learning follows from two different sources. First, as noted earlier, Robinson and colleague (2008) identified the path between instructional leadership and teacher learning as the most potent means by which school leaders impact student learning. Second, Lieberman and Pointer-Mace (2006) made a cogent argument for the belief that teacher learning is the key to sustainable education reform. These findings yielded a new line of empirical inquiry aimed at elaborating how school leadership motivates and shapes teacher learning (e.g., Author 2017, 2018; Printy 2008; Qian and Walker 2013; Thoonen et al. 2012). Notably, this line of research overlaps with other research that has examined the effects of leadership on teacher attitudes and practices (e.g., Geijsel et al. 2003; Goddard et al. 2015; Hoy and Hoy 2006; Leithwood et al. 2010; Tschannen-Moran, 2014; Wahlstrom and Louis 2008). This has evolved into a particularly fruitful line of research as it has added to our understanding of how leadership influences school level processes that are linked empirically to student learning.

Infused within the 'topical themes' that comprise the research front is the delineation of several research methodologies among the recent keywords. Thus, we noted an increased use of qualitative methods, mixed methods, and action research to explore leadership practices 'up close' in school settings (e.g., Author 2016, 2017; Day 2009; Grissom et al. 2013; Gurr et al. 2010; Sammons et al. 2014). Qualitative research is also being used increasingly to investigate how context shapes school leadership (e.g., Author 2018; Clarke and O'Donoghue 2017; Mestry et al. 2013; Qian and Walker 2013).

Concurrently, this analysis also highlights the growing use of multi-factor statistical tests (e.g., SEM, HLM, factor analysis) in order to unpack complex interactions between context factors, leadership practices, mediating factors, and learning outcomes. This review identified a rapidly growing body of recent scholarship that illustrates this approach (Author 2010, 2011, 2017, 2018; Boberg and Bourgeois 2016; Goddard et al. 2015; Leithwood et al. 2010; Supovitz et al. 2010; Thoonen et al. 2012; Wahlstrom and Louis 2008). This research has enabled scholars to develop increasingly refined models of how leadership impacts teaching and learning.

We also wish to call attention to longitudinal studies that are uniquely suited to assessing how leadership effects unfold over time (Boyce and Bowers 2018; Grissom et al. 2013; Heck and Hallinger 2010; Marks and Printy 2003; Sammons et al. 2014). In a field where experimental research is exceedingly difficult to carry out, large-scale longitudinal research designs offer significant advantages over cross-sectional studies when it comes to unpacking

causal relationships in the leadership and learning process (Bridges 1982). Indeed, using longitudinal data, Heck and Hallinger (2010) found that a reciprocal or mutual influence model of instructional leadership explained more variance in learning outcomes than did a 'traditional' mediated effects model.

Discussion

This review of research sought to synthesize key trends related to instructional leadership literature, its geographical distribution, key documents, intellectual structure and topics of interest in recent years. In this section of the paper, we highlight limitations of the review, interpret the findings, and propose several implications.

Limitations

This review neither examined nor sought to synthesize findings across the 1,206 papers in our review database. Instead we analyzed bibliographic features of the papers in order to uncover features of this field's intellectual development. Another limitation of the review arises from the identification of relevant articles in the Scopus index. The conceptual boundaries that separate instructional leadership from other leadership constructs are not always clear. As noted earlier, we addressed this limitation, in part, by running a parallel search in Google Scholar in order to ensure that we captured as many relevant documents as possible. Moreover, two researchers did iterative checks to increase the reliability of the search process. Finally, author and document co-citation analyses enabled the identification of literature beyond the sources included in our review.

Interpretation of the findings

The title of this review reprised a question posed by Larry Cuban in 1987, "Have principals become instructional leaders yet?" The method of this review does not permit the authors to speculate on the extent to which principal across the world have become instructional leaders. Nonetheless, it is clear from our findings that, contrary to Cuban's expectations, instructional leadership has not only endured but grown into one of the most powerful metaphors guiding our expectations for school leaders. Moreover, our data validate not only growth in interest, but also the penetration of this construct in discourse on school leadership throughout the world.

This bibliometric review uncovered 1,206 Scopus-indexed journal articles focused explicitly on 'instructional leadership'. Moreover, although this journal literature is by itself substantial, it is noted that our review excluded books, book chapters, conference papers, doctoral dissertations, and journal articles located outside of the Scopus index. Thus, we conclude that a large research-informed knowledge base has evolved around the construct of instructional leadership over the past 80 years.

The growth trajectory of this literature is also notable. We found that 70% of the articles in our database had been authored since 2005, with a rapidly accelerating pace of publication. Our analysis of the growth trajectory also highlighted the interplay between policy, research, and practice. To the extent that student learning outcomes continue to hold the attention of the global policy community, instructional leadership will remain highly relevant to practitioners and continue to attract the attention of scholars.

Although the instructional leadership literature emerged from the USA (Blasé and Blasé 2000 Bridges 1967; Hallinger and Murphy 1986; Weldy 1979), this review found that a trend of increasing geographical diversity in the published literature. More specifically, a rapidly increasing number of relevant studies have been conducted in Asia, Latin America and Africa (Bush 2013; Fromm et al. 2017; Gurr et al. 2010; Mestry et al. 2013; Ng Nguyen Wong and Choy 2015; Qian and Walker 2013). We, therefore, conclude that instructional leadership has gained acceptance as a core construct in the global landscape of educational leadership research and practice.

The conceptual and research review documents revealed earlier in Table 1 represent an empirically established primer on instructional leadership for scholars, policymakers and practitioners. The prominence of these reviews of research highlights both the policy relevance of documenting leadership effects on learning, as well as the importance of periodically consolidating findings from empirical research (see Bush 2013; Walker and Hallinger 2015). The policy relevance of this literature was further supported by the results of co-word analysis which linked instructional leadership directly to keywords such as education policy, education reform, accountability, and teacher evaluation.

Another key finding of this review lies in the convergence of instructional leadership and related models concerned with leadership for learning. Whereas instructional leadership stood out as a highly distinctive construct 40 years ago, an accumulation of research findings has defined a broader set of factors that impact student learning

and school effectiveness. This has led to the development of 'integrated models' of school leadership that have incorporated instructional leadership as one key dimension. This finding was reinforced by the author co-citation analysis map which visualized this convergence of leadership models. Indeed, we noted that Leithwood's node on the map was located adjacent to nodes representing Hallinger and Heck in the Instructional Leadership School. It is hard to imagine a more illuminating and 'accurate' pictorial representation of how the literature on instructional leadership has evolved over time. In concert with complementary findings from the topical analysis, this suggests that the field of instructional leadership is increasingly evidencing a pattern of integration rather than differentiation. This conclusion is supported by findings reported in other recent reviews of research (Author 2018; Boyce and Bowers 2018).

This review complements earlier efforts to understand the intellectual development of instructional leadership as a model of leadership theory and practice (e.g., Author 2018; Boyce and Bowers 2018; Neumerski 2013). This bibliometric review offers an empirically drawn contrast with respect to the process and results of research on instructional leadership. We observed several cycles during the past 80 years in which scholarly critique was followed by conceptual development, empirical research that evidenced change in models and methods, and systematic research reviews. The application of this iterative and cyclical process of programmatic research of a global community of scholars to this line of inquiry has resulted in the elaboration, testing and validation of new knowledge. Consequently 60 years after Bridges' (1967) early critique of the instructional leadership concept, the field has developed increasingly more refined and robust (re)conceptualizations of instructional leadership that are capable of informing policy and practice.

Implications of the findings

The first implication we draw from these conclusions is associated with the growth and ever-increasing impact of the scholarship on school leadership. The field of educational leadership has over the past 40 years reorganized around a conceptual core concerned first and foremost with 'leading teaching and learning' (see also Author 2019). This suggests the continued relevance of instructional leadership in both policy formulation and leadership preparation.

Second, it was noteworthy that findings from the geographical analysis and co-word analysis highlighted studies of instructional leadership in Asia as part of the 'research front'. We assert that the development of a globally-relevant knowledge base on instructional leadership requires an empirically validated understanding of how instructional leadership achieves its effects in different institutional and cultural contexts (Bush 2013; Clarke and O'Donoghue 2017; Walker and Hallinger 2015). Studies that address this issue in different national contexts will benefit from a three-pronged research strategy consisting of qualitative, mixed methods, and large scale cross-cultural comparative research (e.g., Author 2016; Fromm et al. 2017).

We believe that additional mixed methods studies of leadership and teacher learning, a key theme in the research front, are warranted. These studies should examine how instructional leaders contribute to professional learning as well as to the development of professional learning communities. This research should also extend to assessing if and how this learning translates into changes in teacher practice.

More broadly we support studies that elaborate on practices within the 'paths' that link leadership and student learning regardless of whether researchers have access to student achievement data. This recommendation follows from our belief that the rigorous data requirements of studies of leadership effects on student achievement exceed the access accorded to most researchers.

Finally, this review has documented a coherent body of knowledge that offers an increasingly refined understanding of how instructional leadership is enacted and its effects on teaching and learning. Our findings reaffirm the potency of instructional leadership as an important role, but *not the only role* of school leaders (Cuban 1988). Moreover, as suggested by our author co-citation analysis, as the field moves forward integrative conceptualizations of the school leadership role (e.g., Boberg and Bourgeois 2016; Boyce and Bowers 2018; Goddard et al. 2015; Hoy and Hoy 2006; Leithwood et al. 2010; Murphy et al. 2007; Printy et al. 2009) will become increasingly relevant in this literature. Instructional leadership, will however, retain its position at the core of these models.

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