

# **Summary of Empirical Research On Teacher Leaders' Instructional Support Practices**

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Barbara Miller  
Neil Schiavo  
Amy Busey

Education Development Center, Inc.

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## Summary of Research on Teacher Leaders' Instructional Support Practices

Teacher leaders' practices can be sorted into four categories: instructional support (e.g., observing and giving feedback to teachers), communications (e.g., sharing information from district level to teachers), school administration (e.g., selecting instructional materials or evaluating teachers), and general administration (e.g., organizing and managing instructional materials). In this summary of research, we are focused on teacher leaders' practice to provide instructional support to teachers. Three kinds of findings were included in the review of research on teacher leaders' instructional support practices, for a total of fifty studies<sup>1</sup>:

- twenty one studies examine the phenomenon of teacher leader practice, including instructional support strategies;
- twenty five studies investigate the kinds of preparation programs, training, or professional development that results in instructional support practices by teacher leaders; and
- fourteen studies investigate teacher leader practice (notably instructional support strategies) and its impact on teacher practices and on student outcomes.

If you are interested in how these studies were selected and reviewed, a summary of the methodology can be found [here](#).

### Instructional Support Practices by Teacher Leaders

The twenty one studies that examine the phenomenon of teacher leader practice offer the clearest findings on what constitutes instructional support practices. Information about the research studies is displayed in Table 1. Information about the interventions examined is shown in Table 2.

Instructional support practices – namely, strategies by teacher leaders to provide direct support to classroom teachers with a focus on improving instruction – were the predominant kind of teacher leader practice exhibited by teacher leaders across these studies. To a lesser extent, teacher leaders were also engaged in activities that contribute to school administration, such as selecting instructional materials or working directly with a building principal; communications strategies, such as sharing information with teachers or acting as a liaison for an initiative; and/or functions that involved management of materials or resources. Across these studies, teacher leaders were found to have multiple responsibilities, crossing at least two of the categories that we used (average of 2.5 categories).

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<sup>1</sup> Some studies had findings that applied in more than one of the three sets of studies. Studies were included in this summary of research if they had findings with regard to teacher leaders' instructional support practices.

**Table 1: Instructional Support Practices by Teacher Leaders – Study Characteristics**

Study	Sample Size <sup>2</sup>	Data Types		Measures					Purpose	
		Qualitative	Quantitative	Interviews	Observations	Surveys/ Questionnaires	Coaching Logs	Other	Program Evaluation	Research
Secondary department chair roles: Ambiguity and change in systemic reform (Bliss et al., 1995)	68	•				•				•
Elementary school leadership strategies and subject matter: Reforming mathematics and literacy instruction (Burch & Spillane, 2003)	15	•		•	•					•
Improving instructional capacity through field-based reform coaches (Coggins et al., 2003)	48	•	•	•	•	•				•
Teacher leaders: Middle school mathematics classrooms (Cruz, 2003).	20	•		•	•	•				•
Making meaning of teacher leadership in the implementation of a standards-based mathematics curriculum (Doyle, 2000)	4	•		•	•					•
The role of external facilitators in whole school reform: Teachers' perceptions of how coaches influence school change (Feldman & Tung, 2002)	5	•		•		•	•			•
Who's in charge here? Sources of leadership for change in eight schools (Heller & Firestone, 1995)	NA <sup>3</sup>	•		•						•
The mantle of a mentor: The mentor's perspective (Lemberger, 1992)	17	•		•						•
Contested ground: The basis of teacher leadership in two restructuring high schools (Little, 1995)	21	•		•	•			•		•
Content is the subject: How teacher leaders with different subject knowledge interact with teachers (Manno & Firestone, 2006)	8	•		•	•					•
Leadership alignment: The challenge of distributed leadership (Martinez et al., 2005)	NA <sup>4</sup>	•		•	•			•		•
The role of the science co-ordinator in primary schools. A survey of headteachers' views (Moore, 1992)	222	•				•				•
Taking stock: The status of implementation and the need for further support in the BPE-BAC Cohort I and II schools (Neufeld & Woodworth, 2000)	151	•		•	•				•	
Principals and teachers leading together (Ryan, 1999)	12	•		•	•			•		•
Sliding the doors: Locking and unlocking possibilities for teacher leadership (Silva et al., 2000)	3	•		•						•
The practice of leading and managing schools: Taking a distributed perspective to the school principal's work day (Spillane & Camburn, 2006)	NA <sup>5</sup>		•					•		•
Urban school leadership for elementary science instruction: Identifying and activating resources in an undervalued school subject (Spillane et al., 2001)	NA <sup>6</sup>	•		•	•					•
Gardens or graveyards: Science education reform and school culture (Vesilind & Jones, 1998)	2	•		•	•			•		•
The instructional cabinet and shared decision making in the Pittsburgh Public Schools: Theory, practice and evaluation (Wallace et al., 1990)	54	•				•				•
Low profile, high impact: Four case studies of high school department chairs whose transactions "transform" teachers and administrators (Wettersten, 1994)	4	•		•	•					•
Science as content, science as context: Working in the science department (Wildy & Wallace, 2004)	2	•		•	•					•

<sup>2</sup> For the purposes of this table, *Sample Size* refers to the number of teacher leaders involved in the study.

<sup>3</sup> The sample of teacher leaders was not specified; data were collected from principals, teachers, and district informants representing 8 schools.

<sup>4</sup> The sample of teacher leaders was not specified; data were collected from teachers, principals, district leaders, and formally designated teacher leaders in 5 schools.

<sup>5</sup> The sample of teacher leaders was not specified; data were collected from 42 principals.

<sup>6</sup> The sample of teacher leaders was not specified; data were collected from 13 K-8 schools.

**Table 2: Instructional Support Practices by Teacher Leaders – Intervention Characteristics**

Study	Grade levels	Subject <sup>7</sup>				Intervention				Teacher Leader Work			
		Math	Science	Other	NA	Full description	Teacher leader involvement voluntary	STEM faculty involved	Researcher(s) involved	Instructional support	Communications	School administration	General administration
Secondary department chair roles: Ambiguity and change in systemic reform (Bliss et al., 1995)	9-12	•	•	•		Y	?	N	N	•	•	•	•
Elementary school leadership strategies and subject matter: Reforming mathematics and literacy instruction (Burch & Spillane, 2003)	K-5	•		•		N	?	N	N	•		•	
Improving instructional capacity through field-based reform coaches (Coggins et al., 2003)	K-12				•	Y	?	N	Y	•	•	•	
Teacher leaders: Middle school mathematics classrooms (Cruz, 2003).	6-8	•				N	N	N	N	•		•	•
Making meaning of teacher leadership in the implementation of a standards-based mathematics curriculum (Doyle, 2000)	K-5	•				Y	Y	N	N	•	•		•
The role of external facilitators in whole school reform: Teachers' perceptions of how coaches influence school change (Feldman & Tung, 2002)	K-8				•	Y	?	N	Y	•		•	
Who's in charge here? Sources of leadership for change in eight schools (Heller & Firestone, 1995)	K-5				•	Y	?	N	?	•		•	
The mantle of a mentor: The mentor's perspective (Lemberger, 1992)	K-12				•	N	Y	N	Y	•		•	•
Contested ground: The basis of teacher leadership in two restructuring high schools (Little, 1995)	9-12				•	Y	N	N	N	•		•	
Content is the subject: How teacher leaders with different subject knowledge interact with teachers (Manno & Firestone, 2006)	K-12	•	•			N	Y	Y	Y	•		x	x
Leadership alignment: The challenge of distributed leadership (Martinez et al., 2005)	K-12	•				Y	?	N	Y	•		•	•
The role of the science co-ordinator in primary schools. A survey of headteachers' views (Moore, 1992)	K-5		•			Y	?	N	N	•	•		•
Taking stock: The status of implementation and the need for further support in the BPE-BAC Cohort I and II schools (Neufeld & Woodworth, 2000)	K-8				•	Y	?	N	N	•			
Principals and teachers leading together (Ryan, 1999)	9-12				•	Y	N	N	N	•		•	
Sliding the doors: Locking and unlocking possibilities for teacher leadership (Silva et al., 2000)	K-5				•	Y	N	N	Y	•	•	•	•
The practice of leading and managing schools: Taking a distributed perspective to the school principal's work day (Spillane & Camburn, 2006)	K-12				•	Y	?	N	N	•		•	
Urban school leadership for elementary science instruction: Identifying and activating resources in an undervalued school subject (Spillane et al., 2001)	2-5		•			Y	?	N	N	•		•	•
Gardens or graveyards: Science education reform and school culture (Vesilind & Jones, 1998)	K-5		•			Y	?	?	N	•	•	•	•
The instructional cabinet and shared decision making in the Pittsburgh Public Schools: Theory, practice and evaluation (Wallace et al., 1990)	9-12				•	Y	Y	N	N	•	•	•	
Low profile, high impact: Four case studies of high school department chairs whose transactions "transform" teachers and administrators (Wettersten, 1994)	9-12				•	Y	N	N	N	•	•		•
Science as content, science as context: Working in the science department (Wildy & Wallace, 2004)	8-12		•			Y	?	N	N	•		•	•

<sup>7</sup> "Other" refers to other subject areas that were a focus of teacher leader work (e.g., literacy); "NA" refers to teacher leader work that did not have a subject-specific focus (e.g., engaging in whole school reform).

Many teacher leader responsibilities focused on providing support to teachers to improve their instruction, such as teacher leaders observing classroom teaching and giving feedback to teachers, providing professional development, modeling lessons, engaging in lesson planning, leading teacher work groups (e.g., to analyze student work), or co-teaching. The twenty two studies that directly examined teacher leaders' instructional support practices show that multiple strategies were used. Strategies that situated teacher leaders outside the classroom, working with groups of teachers (e.g., providing professional development or leading teacher work groups), were each noted in about one-third of the studies. Less frequently cited were strategies that situated teacher leaders inside the classroom, working with an individual teacher (e.g., demonstration lesson or modeling, observing and giving feedback). See Table 3. There is no prevailing model for teacher leaders providing instructional support to teachers, nor is there sufficient detail in these studies to determine if two or more strategies are sequenced or intentionally used together by teacher leaders.

Studies of teacher leader activity, such as instructional support practices, do not necessarily shed much light on the meaning of those activities in context. Teacher leaders may, for example, observe and offer feedback to teachers, but the significance of that feedback in terms of what guides the teacher leaders' actions or how the teacher receives it is typically not part of these studies. Thus, we learn about *what* constitutes teacher leader practice with regard to instructional support, but not about *why* they engage in such practice.

For the most part, these studies are about teacher leader practice that is relatively new or taking place in systems that are undergoing significant change. As a result, we may know more about what emerging teacher leader practice or practice by new teacher leaders looks like, as opposed to practice by more veteran teacher leaders or practice that takes place after the initial implementation of a large-scale reform effort.

Finally, the findings about the prominence of instructional support strategies used by teacher leaders is consistent across studies of teacher leaders in mathematics and science (e.g., teacher leaders identified with mathematics or with science, or department heads) as well as studies of teacher leaders in other subject areas or where the subject area is not primary (e.g., reform coaches). While there is little in most of these studies about the particular influence of subject matter on teacher leader activities, three studies<sup>8</sup> offer findings about the importance of subject matter that suggest a promising area for future research. These three studies each find that teacher leaders' knowledge, particularly with regard to subject matter, is related to their practice as teacher leaders. When teacher leader practice is focused on instruction (e.g. observing and diagnosing content-related deficits in teachers, or providing resources to improve instruction), teacher leaders make use of the subject-matter knowledge that they hold.

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<sup>8</sup> Burch & Spillane (2003); Little (1995); Manno & Firestone (2006)

**Table 3: Instructional Support Practices by Teacher Leaders – Nature of Teacher Leaders’ Practice**

Study	Instructional Support Practices							
	Observing and Giving Feedback	Providing Professional Development	Lesson Planning	Leading Teacher Work Groups	Demonstration Lessons or Modeling	Co-Teaching	“Coaching” <sup>9</sup> or “Mentoring”	Other
Secondary department chair roles: Ambiguity and change in systemic reform (Bliss et al., 1995)		•						•
Elementary school leadership strategies and subject matter: Reforming mathematics and literacy instruction (Burch & Spillane, 2003)		•		•				
Improving instructional capacity through field-based reform coaches (Coggins et al., 2003)		•						
Teacher leaders: Middle school mathematics classrooms (Cruz, 2003).			•					•
Making meaning of teacher leadership in the implementation of a standards-based mathematics curriculum (Doyle, 2000)				•			•	
The role of external facilitators in whole school reform: Teachers’ perceptions of how coaches influence school change (Feldman & Tung, 2002)				•				
Who’s in charge here? Sources of leadership for change in eight schools (Heller & Firestone, 1995)	•							
The mantle of a mentor: The mentor’s perspective (Lemberger, 1992)	•							
Contested ground: The basis of teacher leadership in two restructuring high schools (Little, 1995)				•				
Content is the subject: How teacher leaders with different subject knowledge interact with teachers (Manno & Firestone, 2006)		•			•		•	
Leadership alignment: The challenge of distributed leadership (Martinez et al., 2005)	•							•
The role of the science co-ordinator in primary schools. A survey of headteachers’ views (Moore, 1992)		•	•	•	•	•		•
Taking stock: The status of implementation and the need for further support in the BPE-BAC Cohort I and II schools (Neufeld & Woodworth, 2000)				•				•
Principals and teachers leading together (Ryan, 1999)								•
Sliding the doors: Locking and unlocking possibilities for teacher leadership (Silva et al., 2000)					•			
The practice of leading and managing schools: Taking a distributed perspective to the school principal’s work day (Spillane & Camburn, 2006)								•
Urban school leadership for elementary science instruction: Identifying and activating resources in an undervalued school subject (Spillane et al., 2001)		•						
Gardens or graveyards: Science education reform and school culture (Vesilind & Jones, 1998)					•			•
The instructional cabinet and shared decision making in the Pittsburgh Public Schools: Theory, practice and evaluation (Wallace et al., 1990)								•
Low profile, high impact: Four case studies of high school department chairs whose transactions “transform” teachers and administrators (Wettersten, 1994)								•
Science as content, science as context: Working in the science department (Wildy & Wallace, 2004)								•

<sup>9</sup> “Coaching” is the label used within the study, without specifying the kind of teacher leader activity.

## Effects of Programs Aimed at Developing Teacher Leaders' Instructional Support Practices

Twenty five studies contain findings on the effects of interventions designed, at least in part, to develop teacher leader instructional support practices. This set of studies links the preparation of teacher leaders to their work with other teachers to improve instruction. Information about the research studies is displayed in Table 4. Information about the interventions examined is shown in Table 5.

Nearly all of these twenty five studies examine the relationship between an intervention and the post-intervention teacher leader instructional support practices<sup>10</sup>. Across this set of studies, a large majority report a positive impact on the instructional support practices of teacher leaders<sup>11</sup>. How teacher leader practice is represented varies across studies. Impact on teacher leaders' instructional support practices is measured primarily in three ways: 1) as an increase in occurrence of, or improvement in the ability to conduct, particular instructional strategies<sup>12</sup>; 2) as an improvement in the knowledge associated with instructional support practices<sup>13</sup>; and 3) as a reported change in the leadership roles or other attributes associated with teacher leader practice<sup>14</sup>. Therefore, though a common finding is that the interventions had a positive impact on teacher leaders' instructional practices, impact was measured differently across the studies. This suggests that, underlying these studies, there are different prevailing models of how to impact teacher leaders' practice: through changing what they *do*, what they *know*, or what *position* they hold in the school.

Across the twenty five studies, teacher leaders were reported as engaging in a variety of instructional support practices after participating in the program interventions. Among the practices reported in these studies, the instructional support strategy of teacher leaders providing professional development for groups of teachers was reported in slightly more than half of the studies, more often than any other strategy. Less frequently cited were teacher leader instructional support practices of leading teacher work groups (e.g. analyzing student work), providing demonstration lessons or modeling, or observing and giving feedback to teachers. See Table 6.

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<sup>10</sup> Slater et al. (1998) is the lone exception

<sup>11</sup> Two of the twenty five studies reported limited impact. Vesilind & Jones (1998) reported limited impact on teachers' practice, given the lack of shared goals and norms of teacher isolation in the schools. Madsen et al. (1991,1992) reported limited impact on teachers' practice due to the variability of impact, from teachers embracing teacher leader practices and evidencing change to teachers resisting teacher leader practices and change altogether.

<sup>12</sup> Fancsali (2004); Fortner & Boyd (1995); Frechtling & Katzenmeyer (2001); Hammerman (1997); Hofstein, Carmelli, & Shore (2004); Johanson et al. (1996); Keedy (1999); Madsen et al. (1991); Madsen & Lanier (1992); Miller et al. (1999); NBPTS (2001); Richardson (2002); Russell (1990); Slater et al. (1998); Wallace et al. (1999); Waller & Klotz (2001)

<sup>13</sup> Even (1999); Fortner & Boyd (1995); Hammerman (1997); Howe & Stubbs (2003); Lalli & Feger (2005); Mimbs (2002); Nesbit et al (2001); Slater et al. (1998); Venville et al. (1998)

<sup>14</sup> Bell-Ruppert (1999); DiMauro & Gal (1994); Johanson et al. (1996); Lewthwaite (2006); Venville et al. (1998)

**Table 4: Developing Teacher Leaders' Instructional Support Practices – Study Characteristics**

Study	Sample Size <sup>15</sup>	Data Types		Measures					Purpose	
		Qualitative	Quantitative	Interviews	Observations	Surveys/ Questionnaires	Coaching Logs	Other	Evaluation	Research
Teachers as leaders of systemic change: How to use them most effectively (Bell-Ruppert, 1999)	26	•		•						•
Teacher Leadership Project 2001: Evaluation report (Brown et al., 2001)	1000	•					•		•	
Use of telecommunication for reflective discourse of science teacher leaders (DiMauro & Gal, 1994)	8	•					•		•	
Integrating academic and practical knowledge in a teacher leaders' development program (Even, 1999)	30	•		•	•	•	•			•
Teacher Leaders for Mathematics Success (TL=MS). Final evaluation report (Fancsali, 2004)	223	•	•	•	•	•			•	
Infusing earth systems concepts throughout the curriculum (Fortner & Boyd, 1995)	174	•				•			•	
Findings from the multi-agency study of teacher enhancement programs (Frechtling & Katzenmeyer, 2001)	? <sup>16</sup>	•		•	•	•		•	•	
Leadership in collaborative teacher inquiry groups (Hammerman, 1997)	7	•		•	•		•			•
The professional development of high school chemistry coordinators (Hofstein et al., 2004)	21	•	•			•			•	
From science teacher to teacher leader: Leadership development as meaning making in a community of practice (Howe & Stubbs, 2003)	3	•		•	•			•		•
The evaluation of the Lead Teacher Project (Johanson et al., 1996)	84		•			•			•	
Examining teacher instructional leadership within the small group dynamics of collegial groups (Keedy, 1999)	2	•		•	•	•	•			•
Gauging and improving interactions in online seminars for mathematics coaches (Lalli & Feger, 2005)	57	•	•				•			•
Constraints and contributors to becoming a science teacher-leader (Lewthwaite, 2006)	3	•	•	•		•		•		•
A new professional role for junior high school science and mathematics teachers (Madsen et al., 1991) Improving mathematics instruction through the role of the support teacher (Madsen & Lanier, 1992)	8	•		•	•	•		•		•
Pebbles in the ocean or fountains of change? New insights on professional development: Examining the links— Professional development, teacher leaders, and school change (Miller et al., 1999)	354	•		•	•		•			•
Leadership development as self-development: An integrated process (Mimbs, 2002)	25	•					•			•
Leading from the classroom. Highlights from the 2001 NBPTS National Board certified teacher leadership survey (National Board for Professional Teaching Standards, 2001)	2186	•				•				•
In their own words: What science and mathematics teacher leaders say are important aspects of professional development (Nesbit et al., 2001)	288	•		•		•				•
Benefits of educational leadership preparation to teachers and schools (Richardson, 2002)	110	•	•			•				•
The dissemination of doing chemistry. Final evaluation (Russell, 1990)	206	•				•			•	
A telecommunications project to empower Kansas elementary/middle level teachers as change agents for integrated science and mathematics education (Slater et al., 1998)	24	•	•	•		•			•	
A state-wide change initiative: The Primary Science Teacher-Leader Project (Venville et al., 1998)	65	•		•		•				•
Six leadership models for professional development in science and mathematics (Wallace et al., 1999)	360	•		•	•		•	•		•
The Identification of teacher leaders through the National Board Certification process in Mississippi Public Schools (Waller & Klotz, 2001)	200	•	•			•				•

<sup>15</sup> For the purposes of this table, *Sample Size* refers to the number of teacher leaders involved in the study.

<sup>16</sup> Data were collected from 1597 science teachers participating in PD programs.



**Table 5: Developing Teacher Leaders' Instructional Support Practices – Intervention Characteristics**

Study	Grade levels	Subject <sup>17</sup>				Intervention			Teacher Leader Work				
		Math	Science	Other	NA	Full description	Teacher leader involvement voluntary	STEM faculty involved	Researcher(s) involved	Instructional support	Communications	School administration	General administration
Teachers as leaders of systemic change: How to use them most effectively (Bell-Ruppert, 1999)	K-12	•	•			N	N	?	Y	•			
Teacher Leadership Project 2001: Evaluation report (Brown et al., 2001)	K-12				•	Y	?	N	N	•	•	•	
Use of telecommunication for reflective discourse of science teacher leaders (DiMauro & Gal, 1994)	8-12		•			N	?	N	Y	•			
Integrating academic and practical knowledge in a teacher leaders' development program (Even, 1999)	6-12	•				Y	Y	N	Y	•			
Teacher Leaders for Mathematics Success (TL=MS). Final evaluation report (Fancsali, 2004)	K-8	•				Y	?	N	N	•			
Infusing earth systems concepts throughout the curriculum (Fortner & Boyd, 1995)	K-12		•			Y	?	Y	Y	•		•	
Findings from the multi-agency study of teacher enhancement programs (Frechtling & Katzenmeyer, 2001)	K-12		•			N	?	?	N	•	•		
Leadership in collaborative teacher inquiry groups (Hammerman, 1997)	K-5	•				Y	Y	N	Y	•			
The professional development of high school chemistry coordinators (Hofstein et al., 2004)	8-12		•			Y	?	?	N	•		•	•
From science teacher to teacher leader: Leadership development as meaning making in a community of practice (Howe & Stubbs, 2003)	K-12		•			N	Y	Y	Y	•			
The evaluation of the Lead Teacher Project (Johanson et al., 1996)	K-5	•	•			N	?	Y	N	•			
Examining teacher instructional leadership within the small group dynamics of collegial groups (Keedy, 1999)	8-12	•		•		N	?	N	Y	•			
Constraints and contributors to becoming a science teacher-leader (Lewthwaite, 2006)	K-5		•			N	Y	N	Y	•			
A new professional role for junior high school science and mathematics teachers (Madsen et al., 1991)	6-8	•	•			Y	N	N	Y	•			
Improving mathematics instruction through the role of the support teacher (Madsen & Lanier, 1992)													
Pebbles in the ocean or fountains of change? New insights on professional development: Examining the links—Professional development, teacher leaders, and school change (Miller et al., 1999)	K-5	•	•			N	?	?	Y	•			
Gauging and improving interactions in online seminars for mathematics coaches (Lalli & Feger, 2005)	K-5	•				Y	Y	N	Y	•			
Leadership development as self-development: An integrated process (Mimbs, 2002)	K-12			•		N	Y	N	Y	•			
Leading from the classroom. Highlights from the 2001 NBPTS National Board certified teacher leadership survey (National Board for Professional Teaching Standards, 2001)	K-12				•	N	Y	N	Y	•		•	
In their own words: What science and mathematics teacher leaders say are important aspects of professional development (Nesbit et al., 2001)	K-5	•	•			Y	Y	?	Y	•		•	•
Benefits of educational leadership preparation to teachers and schools (Richardson, 2002)	?				•	N	?	N	Y	•		•	
The dissemination of doing chemistry. Final evaluation (Russell, 1990)	8-12		•			N	?	N	N	•			
A telecommunications project to empower Kansas elementary/middle level teachers as change agents for integrated science and mathematics education (Slater et al., 1998)	K-8	•	•			Y	Y	N	Y	•			
A state-wide change initiative: The Primary Science Teacher-Leader Project (Venville et al., 1998)	K-5		•			Y	?	Y	?	•	•		
Six leadership models for professional development in science and mathematics (Wallace et al., 1999)	K-5	•	•			Y	?	?	Y	•	•	•	•
The identification of teacher leaders through the National Board Certification process in Mississippi Public Schools (Waller & Klotz, 2001)	K-12				•	N	Y	N	N	•			

<sup>17</sup> "Other" refers to other subject areas that were a focus of teacher leader work (e.g., literacy); "NA" refers to teacher leader work that did not have a subject-specific focus (e.g., engaging in whole school reform).

**Table 6: Developing Teacher Leaders' Instructional Support Practices – Nature of Teacher Leaders' Practice**

Study	Instructional Support Practices							
	Observing and Giving Feedback	Providing Professional Development	Lesson Planning	Leading Teacher Work Groups	Demonstration Lessons or modeling	Co-Teaching	“Coaching” <sup>18</sup> or “Mentoring” <sup>2</sup>	Other
Teacher Leadership Project 2001: Evaluation report (Brown et al., 2001)					•			
Use of telecommunication for reflective discourse of science teacher leaders (DiMauro & Gal, 1994)								•
Integrating academic and practical knowledge in a teacher leaders' development program (Even, 1999)		•						
Teacher Leaders for Mathematics Success (TL=MS). Final evaluation report (Fancsali, 2004)		•				•	•	•
Infusing earth systems concepts throughout the curriculum (Fortner & Boyd, 1995)		•						
Findings from the multi-agency study of teacher enhancement programs (Frechtling & Katzenmeyer, 2001)		•			•			•
Leadership in collaborative teacher inquiry groups (Hammerman, 1997)				•				
The professional development of high school chemistry coordinators (Hofstein et al., 2004)			•	•				•
From science teacher to teacher leader: Leadership development as meaning making in a community of practice (Howe & Stubbs, 2003)		•						
The evaluation of the Lead Teacher Project (Johanson et al., 1996)		•						
Examining teacher instructional leadership within the small group dynamics of collegial groups (Keedy, 1999)				•				
Gauging and improving interactions in online seminars for mathematics coaches (Lalli & Feger, 2005)								•
Constraints and contributors to becoming a science teacher-leader (Lewthwaite, 2006)		•						
A new professional role for junior high school science and mathematics teachers (Madsen et al., 1991)	•			•				
Improving mathematics instruction through the role of the support teacher (Madsen & Lanier, 1992)								
Pebbles in the ocean or fountains of change? New insights on professional development: Examining the links—Professional development, teacher leaders, and school change (Miller et al., 1999)								•
Leadership development as self-development: An integrated process (Mimbs, 2002)				•				
Leading from the classroom. Highlights from the 2001 NBPTS National Board certified teacher leadership survey (National Board for Professional Teaching Standards, 2001)							•	
In their own words: What science and mathematics teacher leaders say are important aspects of professional development (Nesbit et al., 2001)		•						
Benefits of educational leadership preparation to teachers and schools (Richardson, 2002)								•
The dissemination of doing chemistry. Final evaluation (Russell, 1990)		•						•
A telecommunications project to empower Kansas elementary/middle level teachers as change agents for integrated science and mathematics education (Slater et al., 1998)		•						
A state-wide change initiative: The Primary Science Teacher-Leader Project (Venville et al., 1998)		•						
Six leadership models for professional development in science and mathematics (Wallace et al., 1999)	•	•			•		•	
The Identification of teacher leaders through the National Board Certification process in Mississippi Public Schools (Waller & Klotz, 2001)								•

<sup>18</sup> “Coaching” is the label used within the study, without specifying the kind of teacher leader activity.

The effects of interventions, such as preparation programs, training or professional development, on teacher leaders' instructional support practices are consistent across studies of teacher leaders in mathematics and science, as well as studies of teacher leaders in other content areas or where the subject area is not primary. The reported effects are also consistent across studies of teacher leaders in different grade levels. This suggests that intervention programs to develop teacher leaders' instructional support practices may be effective in a variety of settings. However, it is not clear, across these studies, what the magnitude of the impact is or which aspect of an intervention is related to impact on teacher leaders' instructional support practices.

Less than half of the interventions are described in detail, limiting the extent to which the effect on teacher leaders' practices can be attributed to particular aspects of the program design. There are some common features among these interventions that may suggest important design characteristics for impacting teacher leader practice. The majority of the interventions in these studies appear to be extensive, estimated at over 100 hours, generally over a one to two year period. It appears that programs were typically organized around summer institutes or around regular meetings over the course of the program. Programs typically attended to content knowledge. However, findings and discussion within these studies do not make clear the particular contribution of subject matter content as part of the preparation of teacher leaders in mathematics, science or other subject areas. The majority of studies included a description of the topics addressed through the intervention. In those studies in which the topics are identified, the intervention focused on developing teacher leader knowledge of disciplinary content, pedagogy, or leadership. Four studies<sup>19</sup> offer converging evidence of the importance of training for teacher leaders to include opportunities to engage in the practices that they expect to employ as teacher leaders. The interventions in these four studies specified opportunities for teacher leaders to practice leadership in some way.

### **Impact of Teacher Leaders' Instructional Support Practices on Teacher Practice and/or Student Outcomes**

Fourteen studies report on the impact of teacher leaders' instructional support practices on teacher practice and on student outcomes. Information about the research studies is displayed in Table 7. Information about the interventions examined is shown in Table 8.

Across these studies, teacher leaders are reported have positively impacted teacher practice and/or student outcomes. Impact is reported differently across these studies. In a handful of studies, the impact of teacher leaders is measured in the use of a set of curriculum materials by the teachers with whom they work<sup>20</sup>.

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<sup>19</sup> Frechtling & Katzenmeyer (2001); Howe & Stubbs (2003); Miller et al. (1999); Wallace et al (1999)

<sup>20</sup> Adey (1997); Gersten & Kelly (1992); Gillis et al. (1991)

**Table 7: Impact of Teacher Leaders' Instructional Support Practices – Study Characteristics**

Study	Sample Size <sup>21</sup>	Data Types		Measures						Purpose	
		Qualitative	Quantitative	Interviews	Observations	Surveys/ Questionnaires	Coaching Logs	Student Test Scores	Other	Evaluation	Research
Factors influencing uptake of a large scale curriculum innovation (Adey, 1997)	NA <sup>22</sup>	•		•		•					•
Teacher Leaders for Mathematics Success (TL=MS). Final evaluation report (Fancsali, 2004)	223	•	•					•		•	
The role of external facilitators in whole school reform: Teachers' perceptions of how coaches influence school change (Feldman & Tung, 2002)	5	•		•		•	•				•
Coaching secondary special education teachers in implementation of an innovative videodisc mathematics curriculum (Gersten & Kelly, 1992)	1	•		•	•		•				•
The summative evaluation of the Science Quality Education Project (SQEP) (Gillis et al., 1991)	62	•		•						•	
The effectiveness of cohesive schools (Hofman et al., 2001)	NA <sup>23</sup>										
The evaluation of the Lead Teacher Project (Johanson et al., 1996)	84		•			•		•		•	
Distributed leadership and student engagement in school (Leithwood & Jantzi, 1998)	NA <sup>24</sup>		•			•					•
Principal and teacher leadership effects: A replication (Leithwood & Jantzi, 2000)	NA <sup>25</sup>		•			•					•
A new professional role for junior high school science and mathematics teachers (Madsen et al., 1991) Improving mathematics instruction through the role of the support teacher (Madsen & Lanier, 1992) <sup>26</sup>	8	•		•	•	•			•		•
Documenting in-classroom support and coaching activities of a professional development program directed toward school-wide change: An integral part of an organization's evaluation efforts (Race et al., 2002)	NA <sup>27</sup>	•	•						•	•	
Principals and teachers leading together (Ryan, 1999)	12	•		•	•				•		•
Integrating curriculum guides, quarterly benchmark assessments, and professional development to improve student learning in mathematics (Shanahan et al., 2005)	10		•					•			•
Gardens or graveyards: Science education reform and school culture (Vesilind & Jones, 1998)	2	•		•	•				•		•

<sup>21</sup> For the purposes of this table, *Sample Size* refers to the number of teacher leaders involved in the study.

<sup>22</sup> The sample of teacher leaders was not specified; data were collected from 188 middle school teachers and unspecified numbers of principals, heads of science departments, and program coordinators.

<sup>23</sup> The sample of teacher leaders was not specified; data were collected from school leaders, department heads, and teachers from 91 schools.

<sup>24</sup> The sample of teacher leaders was not specified; data were collected from 2,727 inservice teachers who were colleagues of teacher leaders.

<sup>25</sup> The sample of teacher leaders was not specified; data were collected from 2,424 inservice teachers who were colleagues of teacher leaders.

<sup>26</sup> Madsen & Lanier (1992) is a report on a subset of the data contained in Madsen, Gallagher & Lanier (1991). For the purpose of this summary, these two pieces are reviewed as a single study.

<sup>27</sup> The sample of teacher leaders was not specified; data were collected from 265 elementary school teachers.

**Table 8: Impact of Teacher Leaders' Instructional Support Practices – Intervention Characteristics**

Study	Grade levels	Subject <sup>28</sup>				Intervention				Teacher Leader Work			
		Math	Science	NA	Other	Full description	Teacher involvement voluntary	STEM faculty involved	Researcher(s) involved	Instructional support	Communications	School administration	General administration
Factors influencing uptake of a large scale curriculum innovation (Adey, 1997)	6-12		•			Y	N	N	Y	•			
The role of external facilitators in whole school reform: Teachers' perceptions of how coaches influence school change (Feldman & Tung, 2002)	K-8			•		Y	?	N	Y	•		•	
Teacher Leaders for Mathematics Success (TL=MS). Final evaluation report (Fancsali, 2004)	K-8	•				Y	?	N	N	•			
Coaching secondary special education teachers in implementation of an innovative videodisc mathematics curriculum (Gersten & Kelly, 1992)	8-12	•				Y	?	N	Y	•			
The summative evaluation of the Science Quality Education Project (SQEP) (Gillis et al., 1991)	K-12		•			N	Y	N	?	•			•
The effectiveness of cohesive schools (Hofman et al., 2001)	6-12	•				Y	?	N	N	•		•	
The evaluation of the Lead Teacher Project (Johanson et al., 1996)	K-5	•	•			N	?	Y	N	•			
Distributed leadership and student engagement in school (Leithwood & Jantzi, 1998)	K-12				•	N	?	N	N	•			
Principal and teacher leadership effects: A replication (Leithwood & Jantzi, 2000)	K-5				•	Y	?	N	N	•			
A new professional role for junior high school science and mathematics teachers (Madsen et al., 1991) Improving mathematics instruction through the role of the support teacher (Madsen & Lanier, 1992)	6-8	•	•			Y	?	N	Y	•			
Documenting in-classroom support and coaching activities of a professional development program directed toward school-wide change: An integral part of an organization's evaluation efforts (Race et al., 2002)	K-5	•	•			Y	Y	N	Y	•			
Principals and teachers leading together (Ryan, 1999)	8-12			•		N	?	N	N	•		•	
Integrating curriculum guides, quarterly benchmark assessments, and professional development to improve student learning in mathematics (Shanahan et al., 2005)	K-5	•				Y	Y	?	Y	•			
Gardens or graveyards: Science education reform and school culture (Vesilind & Jones, 1998)	K-5		•			Y	?	?	N	•	•	•	•

<sup>28</sup> "Other" refers to other subject areas that were a focus of teacher leader work (e.g., literacy); "NA" refers to teacher leader work that did not have a subject-specific focus, e.g., engaging in whole school reform.

In another set of studies<sup>29</sup>, teachers' instructional practice is unspecified but impact is reported. A third group of studies<sup>30</sup> examines student outcomes in the teacher leaders' classrooms, with the untested assumption that what teacher leaders do in their own classrooms has implications for teacher leaders providing instructional support to other teachers. A fourth set of studies<sup>31</sup> looks at school-level effects on students, treating teacher leaders' instructional support practices as part of the overall school infrastructure that impacts student outcomes. The range of research designs among these fourteen studies reveals a variety of theoretical assumptions about teacher leaders' instructional support practices as a method for impacting teachers and/or students.

While the teacher leaders were reported as engaging in a variety of instructional support practices, particular forms of instructional support were cited more frequently than others in these studies. See Table 9. In studies investigating teacher leaders' impact on student outcomes<sup>32</sup>, teacher leaders were most likely to employ strategies that allowed them to work with a group of teachers, in a setting outside the classroom (e.g. leading professional development or teacher work groups). In studies that examined teacher leaders' impact on teacher practice<sup>33</sup>, those strategies used by teacher leaders in a setting *outside* the classroom were reported with almost the same frequency as instructional support strategies utilized by teacher leaders *within* the classroom, with an individual teacher (e.g. observing classroom instruction and offering feedback, providing a demonstration or model lesson, or co-teaching). This suggests that teacher leaders may be effective through a variety of instructional support practices, although this is an area deserving of more research.

These studies suggest that the particular practices which teacher leaders engaged in were informed by the school and district context in which their work was located. Although these studies described content specific (i.e. mathematics or science) aspects of teacher leader instructional support practices, the research does not address the particular contribution of subject matter content when examining impact on teacher practice or student outcomes. Across the studies, the amount and duration of teacher leader practices with teachers varied, indicating that a larger context of conditions may influence teacher practice and student outcomes, beyond just what teacher leaders do. However, these studies do not investigate how the context in which teacher leaders work contributes to their impact on teacher practice or student outcomes. This is an area for future research.

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<sup>29</sup> Feldman & Tung (2002); Race et al.(2002); Ryan (1999)

<sup>30</sup> Fancsali (2004); Johanson et al. (2001); Shanahan et al (2005)

<sup>31</sup> Leithwood & Jantzi (1998, 2000); Ryan (1999)

<sup>32</sup> Fancsali (2004); Johanson et al. (2001); Leithwood & Jantzi (1998, 2000); Ryan (1999); Shanahan et al (2005)

<sup>33</sup> Adey (1997); Feldman & Tung (2002); Gersten & Kelly (1992); Gillis et al. (1991); Madsen et al. (1991,1992); Race et al.(2002); Ryan (1999); Vesilind & Jones (1998)

**Table 9: Impact of Teacher Leaders' Instructional Support Practices – Nature of Teacher Leaders' Practice**

Study	Instructional Support Practices							
	Observing and Giving Feedback	Providing Professional Development	Lesson Planning	Leading Teacher Work Groups	Demonstration Lessons or Modeling	Co-Teaching	“Coaching” <sup>34</sup> or “Mentoring”	Other
Factors influencing uptake of a large scale curriculum innovation (Adey, 1997)				•		•		
The role of external facilitators in whole school reform: Teachers' perceptions of how coaches influence school change (Feldman & Tung, 2002)				•				
Teacher Leaders for Mathematics Success (TL=MS). Final evaluation report (Fancsali, 2004)		•				•	•	•
Coaching secondary special education teachers in implementation of an innovative videodisc mathematics curriculum (Gersten & Kelly, 1992)	•				•			
The summative evaluation of the Science Quality Education Project (SQEP) (Gillis et al., 1991)		•					•	•
The evaluation of the Lead Teacher Project (Johanson et al., 1996)		•						
Distributed leadership and student engagement in school (Leithwood & Jantzi, 1998)				•				•
Principal and teacher leadership effects: A replication (Leithwood & Jantzi, 2000)				•				•
A new professional role for junior high school science and mathematics teachers (Madsen et al., 1991) Improving mathematics instruction through the role of the support teacher (Madsen & Lanier, 1992)	•			•				•
Documenting in-classroom support and coaching activities of a professional development program directed toward school-wide change: An integral part of an organization's evaluation efforts (Race et al., 2002)	•				•	•		
Principals and teachers leading together (Ryan, 1999)								•
Integrating curriculum guides, quarterly benchmark assessments, and professional development to improve student learning in mathematics (Shanahan et al., 2005)		•						
Gardens or graveyards: Science education reform and school culture (Vesilind & Jones, 1998)					•			

<sup>34</sup> “Coaching” is the label used within the study, without specifying the kind of teacher leader activity.

## **Evidentiary Base for Claims about Teacher Leaders' Instructional Support Practices**

This entire set of studies provides multiple perspectives for understanding teacher leaders' instructional support practices: in the context of all teacher leader practices; interventions that target their development; and their impact on teachers and students. There are some common methodological issues that need to be taken into consideration in understanding the findings included in this summary.

Most studies did not have a research design adequate for generalizing beyond the contexts of the particular study. With some exceptions<sup>35</sup>, studies did not use a comparison group against which to make claims of impact or improvement in teacher leaders' practice, teacher practice, or student outcomes. The sample identified for study was usually not described in much detail and it is not known how participants were identified and selected.

A significant issue for this set of studies is the adequacy of the research design for claims of improvement in, or impact by, teacher leaders' instructional support practices. Very few studies used a pre/post intervention design for data collection<sup>36</sup>. Most of these studies analyzed data collected after the intervention or collected at points in time during and after the intervention.

A second significant issue for these studies is the lack of reliable and valid measures. In the absence of common measures in the field, researchers devised their own instruments or created their own analytic schema, with little or no information reported about the reliability or validity of these measures. It is difficult, therefore, to aggregate findings across studies since it is not clear that the phenomenon is being measured or analyzed in the same ways. A majority of studies employed multiple data sources, though some relied only on a single data source<sup>37</sup>. A frequent limitation in data collection in these studies was a reliance on self-report data from teacher leaders or other teachers, typically in the form of interviews or questionnaires where participants were asked to speak to impact. It was usually not clear from the description of analysis whether data triangulation was attempted or whether there was other verification of self-report data.

Findings represented in these studies seem to apply across grade levels, with studies fairly evenly distributed across elementary and secondary grades. Of the

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<sup>35</sup> Fancsali (2004); Lalli & Feger (2005); Johanson et al. (2001); Shanahan et al. (2006); Waller & Klotz (2001)

<sup>36</sup> Hofstein et al. (2004); Slater et al. (1998)

<sup>37</sup> Bell-Ruppert (1999); Bliss et al. (1995); Brown et al. (2001); DiMauro & Gal (1994); Fancsali (2004); Fortner & Boyd (1995); Gillis et al. (1991); Lalli & Feger (2005); Heller & Firestone (1995); Hofstein et al. (2004); Johanson et al. (1996); Leithwood & Jantzi (1998); Leithwood & Jantzi (2000); Lemberger (1992); Mimbs (2002); Moore (1992); NBPTS (2001); Race et al. (2002); Richardson (2002); Russel (1990); Silva et al. (2000); Spillane & Camburn (2006); Wallace et al. (1990); Waller & Klotz (2001)



fifty studies included in this summary, the majority examined teacher leadership in mathematics and/or science. The remainder examined teacher leadership in subject areas other than mathematics or science, or the setting was not specified. Looking across the fifty studies, subject matter (i.e. mathematics and science) was not prominent in the findings. This may be attributed to the design of these studies, few of which were explicitly designed to explore the relationship between teacher leader instructional support practices and subject matter<sup>38</sup>.

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<sup>38</sup> Exceptions are Burch & Spillane (2003); Little (1995); Manno & Firestone (2006).

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