Appendix A: Scenario Texts Used in This Study

1st Scenario (Responses to video clip of teacher presenting lesson to students.)

Question 1
What did you notice as you watched this video clip?

Question 2
What guidance, IF ANY, would you give this teacher?

2nd Scenario

Four years ago, a new math program was adopted at your school. The math program was chosen because independent research had shown it to work. Over the past few years, math scores on standardized tests have not improved significantly. The math scores of poor students have decreased slightly.

Many of your best teachers are convinced that the new mathematics program is excellent and should be kept. But other teachers are frustrated. A few teachers tell you that they think that the math program is at fault. Others admit that they are starting to use "whatever works," rather than following the math program.

Question: *How would you address this situation?*

3rd Scenario

Your school's reading test scores are significantly lower than the district average, especially for students receiving free and reduced lunches. When you visit classrooms, you see that the teachers are working hard, that the students are paying attention during their reading lessons. Some experienced reading teachers tell you in informal discussions that they are using techniques that have been very effective in the past. One of the teachers remarks, "It must be the kids…" Those who teach math and science say, "It's not us—we're not reading teachers."

Question: *How would you address this situation?*

4th Scenario

For several years now you have been presenting your school's state test results to your faculty at one of the early Faculty meetings. You also provide individual student test results to teachers for each of their incoming classes. After the faculty meeting, several of your teachers expressed frustration with the limited usefulness of these test data. "Those standardized tests can't really capture the reading and writing process," complained Mr. Magnolia -- the leader of your English department.

"These results give me a general picture of the needs of my students in broad categories, like number sense and algebraic thinking, but they don't really help me with what I should focus on in my lessons. This is particularly true for students who need extra help," concurred Ms. Wisteria, a respected mathematics teacher. You would like to make more use of these and other student performance data.

Question: *How would you address this situation?*

5th Scenario

For over a year now, you and your assistant principals have monitored instruction regularly, reviewed teachers grading of students works, and provided them with regular feedback on their classroom performance. Many teachers have openly opposed your efforts – in faculty meetings and other public venues - believing that classroom teaching is a private matter best left to teachers. Comments such as this one are common: "When I close that classroom door, how I teach is an individual decision. I will come to you if I need something."

Question: *How would you address this situation?*

6th Scenario

One year ago, everyone at your school agreed that a primary goal was to foster better communication between teachers and administrators with regard to classroom teaching and student learning. However, when teaching and learning is introduced for discussion in most meetings, the conversation typically stops. When there is a conversation about teaching or learning, it typically centers on the textbook, a curricular unit, or new materials being used.

Question: *How would you address this situation?*

Appendix B: Letter to Expert Principals

I am a doctoral candidate at Vanderbilt University pursuing my Ph. D. in education policy with a special emphasis in principal training and professional development. I am conducting a research study that evaluates a series of measures for educational leadership expertise. Recently there have been three primary lines of research that have defined the practical knowledge and skills that school leaders use in their work:

> 1. "Problem-solving expertise" focuses on strategies that principals demonstrate as they analyze and address complex situations or problems in their schools. This area of research has been defined and measured by Leithwood and colleagues (e.g. Leithwood & Stager 1986 & 1989, Leithwood & Steinbach 1993 & 1995) and others (see Bullock, James, & Jamieson, 1995, or Brenninkmeyer, Sherin, & Spillane, 2004).
> 2. "Leadership content knowledge" includes leaders' knowledge and understanding of subject matter, pedagogical strategies, and professional development strategies that they use to help teachers improve instruction and student achievement. Stein & Nelson (2003) first proposed this area of expertise, and Nelson and colleagues (see Nelson, Benson, & Reed, 2004; and Nelson, Goldsmith, Johnson, & Reed, 2005) have pursued this further.
> 3. "Learning-centered leadership" includes the broader organizational understanding that a leader needs to focus the school as a whole around improved instruction and achievement. This line of research has been developed by Murphy, Elliott, Goldring, & Porter (2006); Goldring, Porter, Murphy, Elliott, and Cravens (2007); and Goldring, Huff, Stitziel Pareja, & Spillane (2008).

All three of these argue that school leaders possess unique expertise that informs their decisions and actions. These lines of research also employ similar strategies to examine this expertise by analyzing how school leaders use knowledge and ideas to respond to school conditions or through measures that simulate school situations. This study proposes and evaluates a set of measures for the expertise summarized in the three primary domains above. These measures include a) a set of scenarios with practical in-school conditions to which principals respond, and b) a set of scoring rubrics to analyze the responses.

One key component of the evaluation process is to have a group of expert principals respond to these scenarios. Participants would need about 50 minutes to complete the scenarios, and I would compensate them for their time. They will not be required to answer any questions they are not comfortable answering. I am asking for help in identifying principals whom you believe to have a high level of expertise in one or more of the following areas. Based on the literature summarized above, I have described key skills or traits that experts in each area possess.

> 1. Problem-solving Expertise: Principals in this category approach conditions or problems in their schools by carefully collecting information about a situation before they address it. They take time to plan how to respond to a situation or discuss the importance of following

plans that have already been established within the school. Experts in this area also understand the value of engaging others in a solution and often delegate responsibilities to others. Finally, these individuals show a willingness and ability to address conflict between others if such tensions are a part of the problem.

2. Leadership Content Knowledge: Expert individuals in this domain possess high levels of expertise in one or more of the areas of subject matter, pedagogical content knowledge, or how teachers learn. First, these school leaders understand the unique natures of different subject areas and how these differences influence other aspects of a subject such as what assessments are best to use. Second, they understand how students learn differently across subjects and the effective teaching strategies for different subjects. They also understand how teacher knowledge may differ across subject areas because of their respective content. Third, experts in this area understand how differences in subject matter influence teachers' professional development needs. They also understand subject-specific professional development strategies for teachers.

3. Learning-centered Leadership: These experts possess skills in organizing their school around a larger vision of improved teaching and learning. They understand how to use a wide variety of data in evaluating conditions in their schools and making different decisions. They emphasize the importance of aligning curriculum, instruction, and assessments with standards and understand how to hold staff and students accountable for their performance. Finally, they understand effective teaching strategies and monitor their teachers to insure their curriculum and instructional practices are aligned with the school's larger mission and to help their teachers improve instruction.

If you know of expert principals who would be willing to respond to a brief set of scenarios and be compensated for their time, I would greatly appreciate your recommendations on who could assist me with this study. For the purposes of the study I will need each individual's name, contact information (phone and email), and the area of expertise that you think each person demonstrates at a high level. I will contact each person to explain the purpose of the study, what is required of him or her, and the compensation involved. If you have any questions please contact me at the email address below. Alternatively, you may contact my faculty advisor Ellen Goldring at 615-322-8037 or ellen.goldring@vanderbilt.edu. Finally, for additional information about giving consent or your rights as a participant in this study, please feel free to contact the Vanderbilt University Institutional Review Board Office at (615) 322-2918 or toll free at (866) 224-8273.

Thank you for your time and assistance.

Sincerely,

Jason Huff

Doctoral Candidate

Peabody College at Vanderbilt University

jason.huff@vanderbilt.edu

Appendix C: Summary of Participating Expert Principals

Principal Expert Locations and School Levels			
	Area of Expertise		
	Problem-solving	*Leadership Content Knowledge*	*Learning-centered Leadership*
School Location: School Level	Ravenna, MI: Elementary	Seattle, WA: Elementary	Detroit, MI: Elementary
	Selbyville, DE: Middle School	Madison, WI: Junior High	Manitowoc, WI: Middle School
	Madison, WI: High School	Milford, Delaware: High School	Newark, DE: High School

Appendix D: List of Content Experts for Review of Coding Rubrics

Below are the individuals who provided feedback on the coding rubrics for this dissertation. Their summaries list relevant publications and accomplishments that qualified them to be a part of this panel.

Name
Area of Expertise: Relevant Experience and Research

Allison, Derek
Problem-solving Expertise: Dr. Allison is Associate Professor of Educational Administration at the University of Western Ontario. Dr. Allison has authored and coauthored multiple articles school leadership issues, and a number focus on the cognitive aspects of school leadership. Notable examples include "Problem Finding, Classification and Interpretation: In Search of a Theory of Administrative Problem Processing" (1996) in the International Handbook of Educational Leadership and Administration" (Leithwood, K. A., Ed.) and "Toward a Conceptual Framework for Leadership Inquiry" (2003) in Educational Management and Administration. His current research project is entitled the "Cognitive Approaches to School Leadership."

Allison, Patricia
Problem-solving Expertise: Dr. Allison has taught at the University of Western Ontario in the Faculty of Education. She has coauthored multiple articles that examine the cognitive dimensions of school leadership including "Trees and forests: Details, abstraction and experience in problem solving" (1993) in Leithwood and Murphy's (Eds.) Cognitive Perspectives on Educational Leadership and "Both ends of a telescope: Experience and expertise in principal problem solving" (1993) in Educational Adminstration Quarterly.

Heuer, Loretta
Leadership Content Knowledge: Ms. Heuer is a Senior Research and Development Associate at the Education Development Center. Much of her

work has focused on mathematics content knowledge for teachers; she is the principal investigator on two NSF-funded projects, *"Instructional Coaching in Mathematics: Researchers and Practitioners Learning from Each Other"* and *"The Coaching Cycle: An Interactive Online Course for K-8 Mathematics Coaches." She is also a researcher on the project NSF-funded* "Thinking About Mathematics Instruction (TMI)" in which she provided training to participating principals and then analyzed principal data to examine their learning of mathematics content knowledge as a results of the training.

Lorton, Juli
Learning-centered Leadership: Dr. Lorton completed her Ph.D. in 2007 at the University of Washington with a dissertation entitled *"Learning to Lead What You Don't (Yet) Know: District Leaders Engaged in Instructional Reform."* She currently works as a Postdoctoral Fellow at the University of Washington in the Education and Leadership Policy Department. Her dissertation examined district leaders' ongoing learning processes as they engage in new strategies to improve instruction within their schools. Dr. Lorton has coauthored a number of pieces with Michael Knapp, Michael Copland, Bradley Portin, and Margaret Plecki that focus support school leaders and their ongoing development to improve student achievement and instruction in their schools.

Hallinger, Philip
Problem-solving Expertise: Dr. Hallinger has written extensively on issues of leadership, leadership development, problem-based learning, and a number of other issues. He worked at Peabody for many years and directed the Institute for School Leaders here; he has recently been a professor and executive director at the College of Management at Mahidol University, Bangkok, Thailand. Hallinger has published numerous articles and books on school leadership and educational leadership development with Ed Bridges, Joseph Murphy, Kenneth Leithwood, among others. He has also edited multiple handbooks on educational leadership.

Portin, Bradley
Learning-centered Leadership: Dr. Portin is Associate Professor of Educational Leadership and Policy Studies at the University of Washington. He has co-authored a number of books with Joseph Murphy, Michael Knapp among others that focus on the principalship. He has also published multiple articles that examine the role of principals in their schools, how to strengthen school leaders in their roles, and the changing nature of the principalship.

Reed, Kristin
Leadership Content Knowledge: Ms. Reed is Senior Research Associate at the Educational Development Center. She is currently co-director of the project *Content Knowledge and Mathematics Instructional Quality in the MSPs: A Study of Elementary and Middle School Principals* (a.k.a. Thinking About Mathematics Instruction). This project investigates the "leadership content knowledge" (LCK) of 500 elementary school principles in the area of mathematics. Ms. Reed has presented numerous papers on the subject of leadership content knowledge at the American Educational Research Association, the National Council of

Teachers of Mathematics, and the National Council of Supervisors of Mathematics, including "Studying Leadership Content Knowledge Using Mixed Methods," "Investigating Mathematics Leadership Content Knowledge," and "Thinking about Mathematics Instruction: A Preliminary Investigation of Elementary and Middle School Principals' Leadership Content Knowledge for Mathematics."

Stein, Mary Kay (University of Pittsburgh)
Learning-centered Leadership: Dr. Stein is a Professor of Learning at the University of Pittsburgh's School of Education. She currently works as Director of the Learning Policy Center and is a Senior Scientist at the Learning Research and Development Center. While much of her work focuses on mathematics content knowledge for teachers, Dr. Stein has published in the area of leadership expertise called "leadership content knowledge" that is used in this dissertation. She coauthored an article in 2003 with Barbara Scott Nelson entitled "Leadership Content Knowledge" that examines what knowledge subject matter and content different school leaders should know to be effective instructional leaders in their schools.

Weinberg, Amy (Educational Development Center)
Leadership Content Knowledge: Ms. Weinberg is a Senior Research Associate at the Education Development Center. Much of her work has focused on mathematics content knowledge and the improvement of teaching, and she has coauthored multiple EDC publications on the connection between this content knowledge and school leadership. Notable articles include *Lenses on learning: A new focus on mathematics and school leadership"* (2003) by Grant, C. M., Nelson, B. S., Davidson, E., Sassi, A., Weinberg, A.S., & Bleiman, J. and *"Lenses on Learning: Classroom observation and teacher supervision in elementary mathematics."* (2003) by Grant, C. M., Nelson, B. S., Davidson, E., Sassi, A., Weinberg, A. S., & Bleiman, J.

**Appendix E: Example of Feedback Documents and Instructions For
"Leadership Content Knowledge"**

Example Response Form for Content Experts to Rate Quality of Response for
Subdomains Under Leadership Content Knowledge

5th Scenario

*One year ago, everyone at your school agreed that a primary goal was to foster
better communication between teachers and administrators with regard to classroom
teaching and student learning. However, when teaching and learning is introduced for
discussion in most meetings, the conversation typically stops. When there is a
conversation about teaching or learning, it typically centers on the textbook, a curricular
unit, or new materials being used.*

Question: *How would you address this situation?*
This scenario leads me to think staff members either do not feel safe discussing their
practice with one another and/or do not know where to begin the conversation. I would
alternate professional development sessions on strong instruction using the assigned
textbooks and materials with collaborative discussions on the same. I would make sure
that the professional development and discussions modeled best practices as we would
want to observe them in use in classrooms. This means I would use a variety of strategies
to engage staff, including small group work, partner work, and individual work. I would
probably not initially require all staff to participate aloud, acknowledging that there are
multiple learning styles, but I would observe for authentic participation and engagement,
individually and privately addressing staff who refuse to engage at another time, outside
of the meeting. Just like teachers require their students to work in class, I would require
staff to work in meetings. The important thing here is to build trust and a safe
environment for sharing, as well as to provide multiple ways of participating and showing
what you've learned.
Mark your scores for this response using the rubrics:
    --Subject Matter: _____
    --Pedagogical Content Knowledge: _____
    --Teachers as Learners: _____

Response and Evaluation Form for Content Experts to Comment on Rubric for
"Subject Matter"
After you have read the scoring rubrics and used them to score the example scenario
responses answer the following questions about the scoring rubric for the subcategory
"subject matter."
1.   Please indicate the extent to which you agree or disagree with the following
statements about the definitions in the scoring rubric.

	Completely Disagree	Mostly Disagree	Neutral (Neither Agree Nor Disagree)	Mostly Agree	Completely Agree
a. The scoring rubric offers a clear definition for this subcategory.	1	2	3	4	5

If you answered "mostly disagree" or "completely disagree," what changes do you recommend making to the definitions?

_____
_____
_____
_____
_____
_____

b. The definition for this subcategory needs to include additional dimensions for it to be more complete.	1	2	3	4	5

If you answered "mostly agree" or "completely agree," what additional dimensions or changes do you recommend that the definition include?

_____
_____
_____
_____
_____
_____

c. The definition for this subcategory needs to include fewer dimensions for it to be more accurate.	1	2	3	4	5

If you answered "mostly agree" or "completely agree," what dimensions do you recommend be changed or deleted from the definition?

_____
_____
_____
_____
_____
_____

2. Please indicate the extent to which you agree or disagree with the following statements about the scoring guides in the scoring rubric.

	Completely Disagree	Mostly Disagree	Neutral (Neither Agree Nor Disagree)	Mostly Agree	Completely Agree
a. The directions provide clear guidance about how to use the rubric to score the text.	1	2	3	4	5

If you answered "mostly disagree" or "completely agree," what changes do you recommend making to the directions?

_____
_____
_____
_____
_____

_____

b. The scoring guide provides clear explanation of what **1**   **2**   **3**   **4** **5**
response qualifies for each level of expertise.
If you answered "mostly disagree" or "completely disagree," what changes do you
recommend making to the explanations?

_____
_____
_____
_____
_____

_____

c. The scoring guide provides clear examples of
responses that qualify for each level of expertise. **1**   **2**   **3**   **4** **5**

If you answered "mostly disagree" or "completely disagree," what changes do you
recommend making to the examples?

_____
_____
_____
_____
_____
_____

_____
Do you have any other comments or concerns about this scoring rubric?

_____
_____
_____
_____
_____
_____

_____
Response and Evaluation Form for Content Experts to Indicate Extent to Which
Scenarios Prompted for Each Subdomain of Leadership Content Knowledge

	After reviewing the scoring rubrics and example responses, to what extent do you think each scenario prompts principals to demonstrate expertise for each subdomain? Mark the box that best fits your response.																			
	Scenario 1				Scenario 2				Scenario 3				Scenario 4				Scenario 5			
Subcategories for Leadership Content Knowledge	A great deal	Somewhat	A little bit	None at all	A great deal	Somewhat	A little bit	None at all	A great deal	Somewhat	A little bit	None at all	A great deal	Somewhat	A little bit	None at all	A great deal	Somewhat	A little bit	None at all
	Check only one.				Check only one.				Check only one.				Check only one.				Check only one.			
Subject Matter																				
Pedagogical Content Knowledge																				

Teachers as Learners																				

Appendix F: Final Definitions and Scoring Guides for Leadership Content Knowledge Subdomains

1. Subject Matter

Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following aspects of subject matter covered in the classroom. For a response to qualify under this category the principal must discuss key components or concepts of the subject matter or the nature of the subject matter.

- different constructs, concepts, or ideas that are central to a particular subject matter. (For example, a principal might discuss how specific arithmetic skills are central to students' mathematical learning or particular reading skills are integral to a students' ability to read.)
- the nature of the content or material that is taught in different subject areas (the scenarios and analysis here focus primarily on mathematics and literacy and reading/language arts). (For example, a principal might discuss how mathematics possesses a definable body of concepts, symbols, vocabulary, and tools, or she might describe how literacy content may stretch across multiple areas such as language, literature, and composition.)
- differences in the nature of the content across subject areas (for example, a principal may point out the differences between math and reading that are summarized above).
- ways in which subject matter content differences influence other aspects of teaching (for example, because of its more diverse materials a literacy program may be focused around training and assessments of certain skills as opposed to pre-set content that is to be covered, while a mathematics program may be more "topic driven" in which agreed-upon content drives the structure of the teaching and instructional time)
- comments or opinions that indicate the principal's stance toward the subject matter. (For example, does the principal see math as a set of procedures to solve problems or a set of ideas about numbers to explore and evaluate?)

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

0. No Mention of the subcategory at all in the response (Examples that would score a "0" include responses that discuss curriculum but do not elaborate on a specific subject area.)

1. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of subject with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention.

>   Specific example of a mere mention of the nature of a subject area: "Reading is a tool to enter into the larger world of information and life skills."

2. Some Discussion of the subcategory in the response

Mentions at least three or more different aspects of subject matter but does not develop any of the aspects.

3. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of subject matter and develops at least one aspect. This means the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, a more developed discussion of subject matter should include multiple details about a subject matter in the discussion as well as an explanation of why the approach is valuable or important.)

> Specific example of a single aspect of subject matter that is developed: "It is important that students in this (math) program understand the basic rules of addition and subtraction; these are the important skills you build on and use in other solving problems before learning other things like multiplication and subtraction."

4. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of subject matter (such as the more developed example above) and develops two or more ; that is, the response goes beyond mentioning the aspects to developing them with more discussion that suggests a deeper understanding of the aspects.

5. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of leadership content knowledge and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of effective leadership content knowledge to making a link or connection between at least two aspects.

> For example, a principal may discuss 1) how subject matters differ in their content and learning requirements for teachers and therefore 2) how professional development strategies need to differ according to subject areas so that 3) such programs can ultimately help to improve the pedagogical skills that teachers employ in their classrooms (this last phrase ties together the first two).

2. Pedagogical Content Knowledge
Definition: This area of expertise focuses on the teaching and evaluation skills that teachers use to successfully help children learn subject matter. In contrast to "subject matter," responses that qualify for this category emphasize the skills or strategies needed to teach content or evaluate how well students are learning the content. This area includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following aspects of pedagogical content knowledge covered in the classroom as they relate to specific subject matter.
- effective teaching strategies for different subject areas
- effective assessment strategies for different subject areas
- how students learn differently in various subjects (for example, mathematics involves applying in some form the agreed-upon concepts,

symbols, and problem-solving strategies, while literacy can range in content from learning to write to evaluating others' compositions)
- how teacher knowledge can differ across subject areas because of their difference in content
- how teaching strategies for different subject areas may differ because of their differing content

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

0. No Mention of the subcategory at all in the response (Comments that discuss generic teaching skills or evaluation strategies without connecting them to specific subject matter would count as a "no mention.")

1. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of pedagogical content knowledge with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention.
> Specific example of a mere mention of pedagogical content knowledge: "It's not like in math, with set rules and problems. You've got to cover so much more in the reading program."

2. Some Discussion of the subcategory in the response
Mentions at least three or more different aspects of pedagogical content knowledge but does not develop any of the aspects. (For example, a principal might briefly list different evaluation strategies for reading, math, and science classes but provide little or no discussion of how these were appropriate to their subjects.)

3. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of pedagogical content knowledge and develops at least one aspect. This means the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, a more developed discussion of pedagogical content knowledge may include multiple details about a strategy or evaluation in the discussion as well as an explanation of why the approach is appropriate for a certain subject area.)
> In this example of a principal offers a more developed discussion of how small groups can be used effectively in reading: "Students have to be given time to read to each other and in small groups. Students should be placed in heterogeneous reading groups so they can listen to each other and share and discuss the book with each other. Parent volunteers or co-teachers can help with the reading groups and the teacher needs to work with each group weekly to listen to them and provide commentary. The teacher must read a book to the class (usually a book above their grade level). The teacher will lead discussions and ask students to visualize, predict and share their feelings about these stories."

4. Quite a Bit of Discussion of the subcategory in the response

Mentions at least two aspects of pedagogical content knowledge and develops two or more; that is, the response goes beyond mentioning the aspects to developing them with more discussion that suggests a deeper understanding of the aspects.

5. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of pedagogical content knowledge and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of effective pedagogical content knowledge to making a link or connection between at least two aspects.
> For example, a principal may discuss in detail 1) how subject matters differ in the teaching strategies that are most effective for each and 2) why different evaluation strategies should therefore be used for each and 3) how principals who recognize these differences and discuss such content specific strategies can best help their teachers improve their teaching (this last phrase ties together the first two).

3. Teachers as Learners
Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following aspects that pertain to viewing teachers as learners and encouraging their continued learning and professional development. Relevant discussions regarding teacher learning about subject matter may occur in a variety of contexts, not just traditional professional development conditions. For a principal's discussion of learning to qualify it must discuss teacher learning in relation to a subject area. For example a principal may discuss how teachers learn through one-one conversations, meetings with fellow teachers, meetings in professional learning communities, or other places.
- key strategies for encouraging or organizing professional development or training for teachers in different subject areas
- strategies to evaluate teacher learning in different subject areas
- how differences in subject area might or can influence professional development needs for teachers (for example, a principal might describe how mathematics professional development could be tightly organized around specific topics in an adopted curriculum while a literacy program may focus on the theories of learning inherent in a program rather than specific reading or writing content, or vice versa)
- subject-specific effective professional development or teaching strategies for teachers (such as the specific concepts that teachers need to learn and understand through professional development in different subject areas)

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

0. No Mention of the subcategory at all in the response
> For example, a principal's general discussion of professional development without specific reference to a subject area or areas would be too broad to qualify for this subdomain.

1. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of teachers as learners with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention.

> Specific example of a mere mention of the nature of teachers as learners. Here the principal discusses questions to discuss with the teachers to understand their learning or training needs, but he offers no discussion of how to pursue larger strategies to help them learn: "The principal needs to meet with each individual grade level team and ask: 'How do you think your children learn best?' 'Does it seem to be working when it relates to reading and math grades?' 'Do you need any other instructional device or training to help you help your kids?' 'What can I do to help you help your students succeed?'"

2. Some Discussion of the subcategory in the response
Mentions at least three or more different aspects of teachers as learners but does not develop any of the aspects.

3. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of teachers as learners and develops at least one aspect. This means the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, a more developed discussion of teachers as learners should include multiple details in the discussion as well as an explanation of why the approach is valuable or important.)

> Specific example of a single aspect of teachers as learners that is developed—this develops the need for professional development to be tied to teachers' specific needs in math. "It appears the math teachers need to understand better how to teach the basic skills where students are failing. Is it subtraction or multiplication or something else? There are professional development programs that target different areas. We'll need to get our teachers into these particular programs based on where they need to improve their skills."

4. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of teachers as learners and develops two or more; that is, the response goes beyond mentioning the aspects to developing them with more discussion that suggests a deeper understanding of the aspects.

5. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of teachers as learners and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of effective teachers as learners to making a link or connection between at least two aspects.

> For example, a principal may discuss 1) how subject matters differ in their content and learning requirements for teachers—what different concepts or strategies they need to understand--and therefore 2) how professional development strategies need to differ according to subject areas to be

more successful in training teachers. This will in turn help guarantee that such programs ultimately help to improve the pedagogical skills that teachers employ in their classrooms (this last phrase ties together the first two).

Appendix G: Final Definitions and Scoring Guides for Learning-centered Leadership Subdomains

1. Data-based Decision Making

Aspects of data based decision-making referred to in the scale below include but are NOT limited to:

- Information sources, data collection, and data analysis strategies
- Different types of student assessment (e.g., using portfolio and other qualitative methods of assessment, using formative/diagnostic as well as evaluative, and so on)
- Data or information of various sorts (e.g., student achievement data, local demographic data, teacher demographic data, classroom observation data, etc.)
- Use of data or information to make decisions regarding school matters
- Evaluation and assessment strategies
- Evidence-based procedures for assessing struggling or low achieving students

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

6. No Mention of the subcategory at all in the response
For example, principal may discuss making a decision about a math program or professional development strategy with no discussion of examining student achievement data to inform the decision.

7. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of data based decision-making (mentions any one of the dimensions or a RELATED dimension). NOTE: saying the same thing 10 times is still a mere mention. (For example, a respondent might refer multiple times to the need to "look at the data" before making a decision, but he or she may not provide specific examples of what data to examine or how to analyze it).

8. Some Discussion of the subcategory in the response
Mentions at least three aspects of data based decision-making (mentions at least three of the dimensions or RELATED data based decision-making dimension).

9. Sufficient Discussion of the subcategory in the response
This deeper understanding is evidenced by greater details about how to pursue a particular aspect. These details demonstrate that the principal understands how to analyze data to evaluate a situation. (For example, the

respondent might mention data-based decision making and go on to discuss how to analyze multiple measures of student achievement. Or, the respondent might mention that decisions need to be based on data and then go on to discuss what specific information beyond student assessment data should be used in this process.)

10. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of data based decision-making and develops two or more; that is, the response goes beyond mentioning an aspect to develop it suggesting a deeper understanding.

11. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of data based decision-making and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of data based decision-making thinking to making a link or connection between at least two aspects. For example, the respondent might first discuss in detail the process of analyzing specific student achievement data and second how to review corresponding classroom observation data to corroborate the student achievement data results. She might then describe how by looking at classrooms where students do well one might be able to identify best teaching practices.

2. **Effective Teaching and Learning**
Aspects of teaching and learning referred to in the scale below include but are NOT limited to:
   - student and/or teacher effort produces achievement,
   - student learning is about making connections between different concepts and skills that they learn,
   - students learn with and through others,
   - student learning takes time,
   - student and teacher motivation is important to effective teaching and student learning,
   - focused teaching promotes accelerated learning,
   - clear expectations and continuous feedback to students and/or teachers activate student learning (this does not include the process of monitoring instruction in classrooms),
   - good teaching builds on students strengths and respects individual differences,
   - good teaching involves modeling what students should learn
   - general references to teachers' use of effective teaching and learning practices (this includes discussions of teachers' use of best practices)
Other dimensions might include but are not limited to:
   - cognitively or developmentally appropriate or challenging curriculum for students
   - cognitively or developmentally appropriate assessment strategies to evaluate student learning
   - applied learning theory
   - individualized instruction

- reciprocal teaching
- inquiry teaching or direct instruction

* Note: pay careful attention to discussions of more than one teacher; these may relate more to systemic changes in curriculum that relate more directly to the "standards-based reform/systems thinking."

** Note: in situations that discuss professional development or teacher cooperation/collaboration there must be strong, explicit, specific references to effective teaching and learning strategies before it fits under effective teaching and learning.

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

0. No Mention of the subcategory at all in the response
For example a respondent might summarize teaching strategies he has observed without offering an opinion of them or discussing why these are effective.

6. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of effective teaching and/or learning with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention. For example a principal may discuss briefly the need for "good teaching" or the importance of setting "clear expectations" but then provide no details about what such actions would entail.

7. Some Discussion of the subcategory in the response
Mentions at least three or more different aspects of effective teaching and learning but does not develop any of the aspects.

8. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of effective teaching and learning and develops at least one aspect; that is, the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, the respondent might mention effective instructional strategies in reading and say teachers need to use "writing workshop" or "balanced literacy." Or, the respondent might mention evidence based teaching or assessment and go on to note trying to figure out the strategies that teachers use who have high performing students).
***Note: More developed discussions of effective teaching and learning need to include multiple details in the discussion as well as an explanation of why the approach is valuable or important
   Example of single aspect (individualized instruction) that is developed (in this case the principal discusses specific steps to take in implementing more individualized instruction for students): "Students must have pre assessment in the critical areas of reading such as vocabulary, phonics, fluency, comprehension, etc. Teachers must know the basic reading levels

of their students. Instruction must be tailored to meet these specific needs."

9. Quite a Bit of discussion of the subcategory in the response
Mentions at least two aspects of effective teaching and learning and develops two or more; that is, the response goes beyond mentioning the aspects to developing them with more discussion that suggests a deeper understanding of the aspects.

10. A Great Deal of discussion of the subcategory in the response
Mentions at least two aspects of effective teaching and learning and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of effective teaching and learning to making a link or connection between at least two aspects. For example, the respondent might mention and develop how student motivation is critical to student learning and then link it to how student effort produces achievement rather than IQ alone. A second example could be that a principal develops 1) how to determine if teachers are using best practices in their teaching, and 2) the importance of using individualized instruction, and she/he then connects them by discussing how individualized instruction should be included as a part of best practices.

3. **Monitoring Instructional Improvement**
Aspects of monitoring instructional improvement referred to in the scale below include but are NOT limited to:
- Benchmarking: setting teacher performance levels and evaluating teacher progress toward those (this may include evaluation from outside the classroom through strategies such as examining students' progress in a particular teacher's classroom)
- Procedures for monitoring teachers formally and informally
- Observing a teacher who was trying new instructional practices or using new curricular materials
- Monitoring the curriculum used in classrooms to see that it reflects the school's improvement efforts
- Monitoring classroom instructional practices to see if they reflect the school's improvement efforts

These codes do not include descriptions of coaching or mentoring, in which a more knowledgeable professional observes and models instruction and offers advice or feedback. These also do not include collaboration, in which a principal might help teachers work together or coordinate time to share ideas and information. Finally, cases in which principals describe how they simply state expectations with no evaluation/monitoring do not qualify in this case.

Examples:

"I would make sure teachers were aware of the evaluation process and of our intention to closely monitor the academic progress of students."

"I would first determine if the new science program was even being used by teachers. To do this I would drop in on classrooms to observe on a regular basis, and would have my science specialists do the same."

In Example 1, there is an explicit reference to monitoring – "intention to closely monitor." In Example 2, although the word monitoring is not used, this is clearly what the respondent intends. The respondent proposes to monitor science teaching to see if a new science program is being used in the classroom.

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

6. No Mention at all of the subcategory in the response
For example, a principal may discuss the need to understand what is going on in classrooms but provide no discussion of how to monitor or observe teachers as they work.

7. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of monitoring instructional improvement (mentions any one of the dimensions or a RELATED dimension). NOTE, saying the same thing 10 times is still a mere mention. Here, a principal could state that she observes in a classroom without giving details about how she does this, or she might refer to evaluating curriculum without discussing the criteria she would use.

8. Some Discussion of the subcategory in the response
Mentions at least three aspects of monitoring instructional improvement (mentions at least three of the dimensions or a RELATED monitoring instructional improvement dimensions).

9. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of monitoring instructional improvement and develops at least one aspect; that is, the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, the respondent might mention monitoring instructional improvement and go on to discuss specific conditions or criteria for which she or he might look in the classroom. Or, the respondent might discuss monitoring conditions in a classroom and then elaborate on how these conditions relate directly to the school's larger improvement efforts.)

10. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of monitoring instructional improvement and develops two or more; that is, the response goes beyond mentioning an aspect to develop it suggesting a deeper understanding.

11. A Great Deal of Discussion of the subcategory in the response

Mentions at least two aspects of monitoring instructional improvement and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of monitoring instructional improvement thinking to making a link or connection between at least two aspects. For example, the respondent might discuss in detail 1) setting teaching performance levels and 2) specific procedures for monitoring instructional improvement toward those levels, and then she might explain how these steps help to promote the overall school improvement plan.

4. **Standards-based and Systems Thinking**
   Aspects of standards and system thinking referred to in the scale below include but are NOT limited to:
   - Standards-based reform
   - Standards (e.g., curriculum standards, content standards, learning standards, performance standards, etc.)
   - Curriculum design, implementation, evaluation, and refinement (this may include specific steps or challenges to accomplishing these conditions in school, strategies to pursue these goals, or comments about the importance or role of these in successful schools)
   - What students should know and be able to do at any grade level or in any school subject
   - Alignment or coherence in general,
   - Alignment or coherence in reference to student assessment, curriculum standards, professional development, curricular materials, etc.
   - Alignment or coherence of instruction, assessments, and materials.
   - Accountability (e.g., holding staff accountable for learning, holding students accountable)
   - Systemic reform as it relates to standards or curricula
   - Systems theory as it relates to standards or curricula
   - The political, social, cultural, and economic systems and processes that impact schools

   There are possible overlaps between this code and data-based decision making. We use this general rule: if a principal discusses beginning with data and then moving to curricular decisions, we first consider this as a discussion of data-based decision-making and then look to determine if standards/alignment/systems thinking are also mentioned. If so, this may be a double code.

   Discussions of state and national assessments are not in and of themselves standards unless standards are explicitly mentioned. We treat most of these discussions as data-based decision making because they refer to the understanding and use of assessments that include data.

   For professional development to be included in this code there must be explicit discussions of standards, alignments, or accountability.

Be careful to look closely at any system, school-wide or community-wide references as a part of the systemic theory or larger systems that influence the school.

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

6. No Mention of the subcategory in the response
For example, a principal might discuss specific skills to teach in a course without explaining how the skills are part of the larger curriculum or how they relate to what students should know at a particular time.

7. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of standards and system thinking (mentions any one of the dimensions or a RELATED dimension). NOTE, saying the same thing 10 times is still a mere mention. For example, a principal might comment that "setting high standards" is important but not elaborate on how to do this. He might also call for "aligning the curriculum with the standards" without explaining what this entails.

8. Some Discussion of the subcategory in the response
Mentions at least three aspects of standards and system thinking (mentions at least three of the dimensions or RELATED standards and system thinking dimension).

9. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of standards and system thinking and develops at least one aspect; that is, the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, the respondent might mention standards based reform and go on to talk about performance standards or content standards with specific details about the standards. Or, the respondent might mention that alignment is important and go on to note that assessment must be aligned with content standards. He or she might also discuss how one goes about achieving such alignment.)

10. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of standards and system thinking and develops two or more; that is, the response goes beyond mentioning an aspect to develop it suggesting a deeper understanding.

11. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of standards and system thinking and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of standards and system thinking to making a link or connection between at least two aspects. For example, the respondent might discuss specifics of different standards and how to use these to align curriculum and assessment; she might then note that when you do this you can hold teachers accountable for student achievement.

Appendix H: Final Definitions and Scoring Guides for Problem Solving Expertise Subdomains

1. Gather Information to Understand the Situation
Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of collecting new information before addressing an issue. This also includes any responses where the principal discusses his or her assumptions about a situation.
- explanation of specific assumptions she or he is making about the situation and the potential strengths or limitations of those assumptions
- different sources of information a principal would reference to find out more about a problem (such as different people or types of data)
- strategies to find out such information, such as how to collect it or analyze it
- discussion of the importance or role of additional information to understand a situation
- discussion of the role that additional information can play in informing the principal's assumptions

6. No Mention of any of the aspects OR a respondent makes assumptions about a situation without providing supporting information (jumping to a conclusion about what is happening is also evidence of little or no expertise in collecting new information). In making these assumptions the respondent may also fail to clarify that the statements are indeed assumptions.

> For example, a principal might discuss how a difficult teacher has "no interest in working with other teachers here" or "is not interested in being here" without qualifying the statements as assumptions based on limited observations.

7. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of subject with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention.
> For example, a respondent might mention the need to look at standardized test scores before understanding what is happening with student achievement in reading. However, she or he provides no additional evidence of how to do this or why additional evidence would help to inform the situation.

8. Some Discussion of the subcategory in the response
Mentions at least three or more different aspects of gathering information but does not develop any of the aspects.

9. Sufficient of Discussion of the subcategory in the response
Mentions at least one aspect of gathering information and develops at least one aspect. This means the response goes beyond mention of the aspect to develop it

suggesting a deeper understanding. (For example, a more developed discussion of gathering information should include multiple details in the discussion as well as an explanation of why the approach is valuable or important.)

> For example, a principal could discuss the importance of asking additional personnel about the condition and then go on to detail specific individuals and why their perspectives are important. Or a principal might qualify why she or he has limited knowledge of the situation and discuss in detail how other perspectives would help to inform him or her of the conditions.

10. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects or strategies for gathering information and develops two or more; that is, the response goes beyond mentioning the aspects or strategies to developing them with more discussion that suggests a deeper understanding of those aspects.

11. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of gathering additional information and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of gathering additional information to making a link or connection between at least two aspects. For example, a principal may discuss 1) how specific data such as standardized test scores would provide insights into what is happening with the math curriculum and 2) how conversations with specific teachers would also provide information regarding the situation. She might then describe how she would use the two sources of information together to reach a deeper understanding of the conditions.

2. Address Conflict with Others
Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following aspects regarding addressing conflict with or between faculty members:
- the importance of facing conflict with others so as to address disagreements or misunderstandings
- strategies to evaluate the importance of addressing a conflict (i.e. whether or not a conflict is important enough to engage)
- strategies to determine how far to push in engaging a conflict (e.g. is it important to "win" a conflict, or is a compromise preferred?)
- strategies to address conflict with others
- the benefits that come from addressing conflict
- what one can learn from addressing a conflict

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

0. No mention of the dimension OR the respondent discusses avoiding conflict if possible (this implies the individual will not address a disagreement with another person).

1. A Little Discussion of the subcategory in the response

Mere mention of one or two aspects of subject with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention.

> With a mere mention here a respondent might discuss briefly her plan to speak with another person with whom she has a disagreement, but she might offer few details about how to do this in a productive way.

2. Some Discussion of the subcategory in the response
Mentions at least three or more different aspects of addressing conflict but does not develop any of the aspects.

3. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of addressing conflict and develops at least one aspect. This means the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, a more developed discussion of addressing conflict should include multiple details in the discussion as well as an explanation of why the approach is valuable or important.)

> A developed description of addressing conflict might include a principals' elaboration on specific strategies she would use to discuss a disagreement with a teacher so that the two reach a common understanding and resolve the conflict.

4. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of addressing conflict and develops two or more; that is, the response goes beyond mentioning the aspects to developing them with more discussion that suggests a deeper understanding of the aspects.

5. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of addressing conflict and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of addressing conflict to making a link or connection between at least two aspects. For example, a respondent may describe 1) why it is important to address a particular conflict with a staff member 2) what particular strategy he can use to resolve the disagreement and 3) how the resolution can help promote better communication and cooperation between the two (this last phrase ties together the first two).

3. Delegation of Tasks
Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following aspects regarding delegating responsibilities:
- Specific reasons for assigning (or not assigning) particular responsibilities to other staff members (for example, it may be more efficient, or those individuals might possess more information about particular aspects of a project or issue). (Note: here a principal with expertise may also explain why he or she made the decision not to delegate responsibility.)
- Strategies for delegating tasks to other staff members (such as reasons for whom to select or what information and responsibilities to assign to them)

- Specific tasks to delegate to others
- Specific mention of individuals or people to whom to assign tasks
- Plans to transfer authority for something

0. No Mention of the Dimension OR the respondent discusses or implies that he will take on a complex task or project entirely by himself or herself (this implies that he/she will not delegate any responsibilities to others).

1. A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of subject with no development of the aspect(s). NOTE: mentioning the same thing 10 times with no development is still a mere mention.
> In a "mere mention" a principal might discuss briefly the need to ask a reading specialist to follow up with a certain teacher. However, he provides few details few details about what the specialist should do or discuss with the teacher. Also, the principal might not discuss the value or benefit of delegating this responsibility to a specialist.

2. Some Discussion of the subcategory in the response
Mentions at least three or more different aspects of delegating tasks but does not develop any of the aspects.

3. Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of delegating tasks and develops at least one aspect. This means the response goes beyond mention of an aspect to develop it suggesting a deeper understanding. (For example, a more developed discussion of task delegation should include multiple details in the discussion as well as an explanation of why the approach is valuable or important.)
> A more developed discussion could include a principal's discussion of the need to ask specific math teachers to collect test score and homework data about their low-scoring students before they as a team consider what new math program to use. He or she might also discuss specific tasks for them to undertake or explain the advantage of having the team address this need.
> Alternatively, a principal might explain specifically why he or she will take on an issue with such details as why she can do the best job or why others do not have the capacity to address the issue.

4. Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of delegating tasks and develops two or more; that is, the response goes beyond mentioning the aspects to developing them with more discussion that suggests a deeper understanding of the aspects.

5. A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of gathering tasks and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of task delegation to making a link or connection between at least two aspects. For example, a respondent may describe 1) why it is important to include teachers in

the evaluation of a math program 2) what particular roles they can play in the evaluation process and 3) how their participation helps to build support for the plan that results from the evaluation process (this last phrase ties together the first two).

4. Planning and Goal Setting
   Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following:
   • the use of detailed prior planning to address a situation or challenge
   • how to identify specific steps required to address a situation
   • the importance of following a plan to successfully address a situation or solve a problem
   • the concepts school mission, vision, or strategy and the contents of or differences between each of these
   • the process of creating a vision to improve student achievement
   • developing a strategy to implement the vision
   • building action plans that align with and execute the school design or the school redesign process
   • building action plans that create and align all the elements that contribute to student learning within the school
   • the principal's role in creating and leading a learning culture and organization within the school. To qualify for this code the discussion must focus on actions that explicitly foster learning between teachers and/or staff members. For example, a principal's simple mention of promoting "collaboration" would not qualify unless she/he discussed how such a strategy would improve the school learning culture or the exchange of pedagogical ideas between staff members.
   • general reference to planning, vision, mission, or strategy. This may include references to teacher planning only if the principal mentions such planning as a component of an overall vision or plan for the school. A simple mention of promoting teacher planning with little other context would not fit under this.

The code refers both to short term plans or strategies to address a situation as well as the broader plans for organizing all the school resources and activities around a school's vision or strategies; it can include but does not focus exclusively on curriculum or teaching. In some cases a principal may overlap with or discuss another code (such as standards-based reform or systems thinking) while elaborating on the planning process. In these cases code those sections as part of the planning discussion (see examples below).
This code focuses on knowledge of the planning process and its different components for both short and long term issues. In summary the code refers to the activity or concepts involved in developing a plan or vision. It does not include principals' descriptions of actively evaluating or assessing progress in achieving a vision, strategy, or action plan. For such actions to be coded as "planning and goal setting" the individual must discuss these actions in the context of larger plans or strategies for the school.

Scoring Guidelines: Assign these scores based on how well a principal's answer includes the following components.

6.   No Mention of Dimension at all in the response
For example, a principal may discuss a response to a situation without laying out a sequence of steps to address it.

7.   A Little Discussion of the subcategory in the response
Mere mention of one or two aspects of planning and goal setting (mentions any one of the aspects or a RELATED aspect). NOTE, saying the same thing 10 times is still a mere mention. For example, a principal might mention the importance of setting and agreeing on a clear school vision but provide no specific details about how to do that. Alternatively, he or she might discuss the importance of developing a plan to address a situation but not provide any details about it.

8.   Some Discussion of the subcategory in the response
Mentions at least three aspects (or RELATED aspects) of planning and goal setting.

9.   Sufficient Discussion of the subcategory in the response
Mentions at least one aspect of planning and goal setting and develops at least one aspect; that is, the response goes beyond mention of planning or goal setting to develop it suggesting a deeper understanding. (For example, the respondent might mention planning and goal setting and go on to discuss specific steps to develop the vision for the school. Or, the respondent might discuss setting the school's vision and then list specific strategies he or she would use to implement the vision).

10.   Quite a Bit of Discussion of the subcategory in the response
Mentions at least two aspects of planning and goal setting and develops two or more; that is, the response goes beyond mentioning an aspect to develop it suggesting a deeper understanding.

11.   A Great Deal of Discussion of the subcategory in the response
Mentions at least two aspects of planning and goal setting and develops two or more AND makes connections between at least two of the aspects mentioned; that is, the response goes beyond mentioning and developing two or more aspects of planning and goal setting to making a link or connection between at least two aspects. For example, the respondent might discuss 1) the process for establishing specific strategies that align with the school vision and 2) how to build action plans that execute the strategy, and then she might explain how these steps all connect to the overall goal of improving student achievement in the school.

REFERENCES

Allard, F., Graham, S., & Paarsalu, M. E. (1980). Perception in sport: Basketball. *Journal of Sport and Exercise Psychology, 2*(1), 14-21.

Allen, M. J., & Yen, W. M. (1979). Introduction to Measurement Theory. Monterey, CA: Brooks/Cole Publishing Company.

Anderson, J. R. (1976). *Language, Memory, and Thought,* Hillsdale, NJ: Lawrence Erlbaum Associates.

Anderson, J. R. (1983). *The Architecture of Cognition,* Cambridge, MA: Harvard University Press.

Anderson, J. R. , Reder, L.M, Simon, H. A. (1996). Situated learning and education. *Educational Researcher, 25*(4), 5-11.

Anderson, J. R. , Reder, L.M, Simon, H. A. (1997). Situative versus cognitive perspectives: Form versus substance. *Educational Research.* 26(1). 18-21.

Austin, J. R. (1998). *Knowing what other people know: Situated expertise and assistance seeking behavior in cross-functional teams.* (Doctoral dissertation, Boston College, 1998). Retrieved August 27, 2008, from http://escholarship.bc.edu/dissertations/AAI9915552/.

Ball, D. L., Hill, H. C., Bass, H. (2002). *Developing Measures of Mathematics Knowledge for Teaching.* Ann Arbor, MI: University of Michigan.

Baron, M. B., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Blumberg, A., & Greenfield, W. (1980). *The effective principal: Perspectives on school leadership.* Boston: Allyn & Bacon.

Bolman, L. G., & Deal, T. E. (1993). Everyday epistemology in school leadership: Patterns and prospects. In P. Hallinger, K. Leithwood, & J. Murphy, *Cognitive Perspectives on Educational Leadership.* New York: Teachers College Press.

Borko, H., and Livingston, C. (1989). Cognition and improvisation. Differences in mathematics instruction by expert and novice teachers. *American Educational Research Journal,* 26, 473-498.

Borko, H., & Shavelson, R. J. (1990). Teacher decision making. In B. Jones & L. Idols (Eds.), *Dimensions of Thinking and Cognitive Instruction.* Hillsdale, NJ: Earlbaum.

Bossert, S., Dwyer, D., Rowan, B., & Lee, G. (1982). The instructional management role of the principal. *Educational Administration Quarterly, 18*(3), 34-64.

Bougon, M.G. (1983). Uncovering cognitive maps: the self-Q technique, in Morgan, G. (Ed.), *Beyond Method. Strategies for Social Research*, Sage, Beverly Hills, CA, pp. 173-88.

Bransford, J. D. (2000). *How People Learn: Brain, Mind, Experience, and School.* Washington, D. C.: National Academy Press.

Bransford, J. D., & Schwartz, D. L. (1999). Rethinking transfer: A simple proposal with multiple implications. *Review of Research in Education, 24*(40), 61-100.

Brenninkmeyer, L. D., Sherin, B., & Spillane, J. P. (2004). *Representing a problem space: towards a deeper understanding of the practice of instructional leadership.* Paper presented at the International Conference on Learning Sciences in Santa Monica, CA.

Brenninkmeyer, L. D., & Spillane, J. P. (2008). Problem-solving processes of expert and typical school principals: a quantitative look. *School Leadership & Management, 28*(5), 435-468.

Bridges, E. M. (1982). Research on the school administrator: The state of the art, 1967-1980. *Educational Administration Quarterly, 18*(3), 12-33.

Brown, J.S., Collins, A., & Duguide, S. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32-42.

Bullock, K., James, C., & Jamieson, I. (1995). An exploratory study of novices and experts in educational management. *Educational Management Administration & Leadership, 23*(3), 197-205.

Busch, P. A., & Richards, D. (2001). *Graphically Defining Articulable Tacit Knowledge.* Paper presented at Pan-Sydney Workshop on Visual Information Processing, Sydney, Australia.

Busch, P. A., Richards, D., Dampney, C.N.G. (2001). *Visual Mapping of Articulable Tacit Knowledge.* Paper presented at Australian Symposium on Information Visualization, Sydney, Australia.

Camburn, E. & Burns, C. (2004). Assessing the validity of a language arts instruction log through triangulation. *Elementary School Journal*, 105, 49-73.

Camburn, E., Rowan, B., & Taylor, J. (2003). Distributed leadership in schools: The case of elementary schools adopting comprehensive school reform models. *Educational Evaluation and Policy Analysis, 25*(4), 347-373.

Camburn, E., Spillane, J., Sebastian, J. (2006). *Measuring Principal Practice*. Paper presented at the annual American Education Research Association conference in San Francisco.

Chi, M. T. H., Feltovich, P. J., Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science, 5,* 121-152.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309-319.

Copland, M. C. (2000). Problem-based learning and prospective principals' problem-framing ability. *Educational Administration Quarterly, 36*(4), 585-607.

Corrigan, S. Z. (1995). Book review: Expert problem solving: Evidence from school and district leaders. *Educational Administration Quarterly, 31*(4).

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98-104.

Crocker, L., & Algina, J. (1986). *Introduction to Classical and Modern Test Theory.* Wadsworth: Thompson Learning.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334.

Cronbach, L. J. (1971). Test validation. *Educational Measurement, Issues and Practice*, 2, 443-472.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*(4).

Denzin, N. K. (1989). *The research act: A theoretical introduction to sociological methods.* (3rd edition) Englewood Cliffs, NJ: Prentice-Hall.

Dwyer, D. C. (1985). Understanding the principal's contribution to instruction. *Peabody Journal of Education, 63*(1), 3-18.

Eddy, A. S. (1988). *The relationship between the Tacit Knowledge Inventory for Managers and the Armed Services Vocational Aptitude Battery.* Unpublished master's thesis, St. Mary's University, San Antonio, TX.

Eden, C. (1992), On the nature of cognitive maps. *Journal of Management Studies,* 29(3), 261-266.

Elmore, R. F. (2000, Winter). *Building a New Structure for School Leadership.* Washington, DC: The Albert Shanker Institute.

Ericsson, K. A., Charness, N., Feltovich, P. J., & Hoffman, R. R. (2006). *The Cambridge Handbook of Expertise and Expert Performance.* New York: Cambridge University Press.

Eubanks, E. E., & Levine, D. U. (1983, June). A first look at effective schools projects in New York City and Milwaukee. *Phi Delta Kappan, 64*(1), 697-702.

Firestone, W. A. (1989). Using reform: Conceptualizing district initiative. *Educational Evaluation and Policy Analysis, 11*(2), 151-165.

Firestone, W. A., & Corbett, H. D. (1988). Planned organizational change. In N. J. Boyan (Ed.), *Handbook of Research on Educational Administration,* pages 321-340. New York: Longman.

Gable, R. K., & Wolf, J. W. (1993). *Instrument Development in the Affective Domain: Measuring Attitudes and Values in Corporate and School Settings.* Boston: Kluwer Academic.

Glaser, R., & Chi, M. T. H. (1988). Overview. In M. T. H. Chi, R. Glaser & M. J. Farr (Eds.), *The nature of expertise.* Hillsdale, NJ: Lawrence Erlbaum.

Gleim, J. A., & Gleim, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Paper presented at Midwest Research to Practice Conference in Adult, Continuing, and Community Education in Columbus, OH.

Goldring, E. B., & Berends, M. (2008). *Leading with Data: Pathways to Improve Your School.* Thousand Oaks, CA: Corwin Press.

Goldring, E. B., Camburn, E., Huff, J. T., & Spillane, J. P. (2008). *Assessing Mediating Relationships in Randomized Experiments with School Principals.* Paper presented at the annual convention of the Society for Research on Educational Effectiveness in Crystal City, VA.

Goldring, E. B., Huff, J. T., Stitziel Paraja, A., & Spillane, J. P. (2008). *Measuring Principals' Content Knowledge of Learning-Centered Leadership.* Paper presented at the annual convention of the American Educational Research Association in New York, NY.

Goldring, E. B., Porter, A. C., Murphy, J., Elliott, S. N., Cravens, X. (2007). *Assessing Learning Centered leadership: Connections to Research, Professional Standards, and Current Practices.* Document downloaded from http://www.vanderbilt.edu/lsi/laspage/rationale.pdf on February 28, 2008.

Goldring, E. B., & Rallis, S. (2000). *Principals of Dynamic Schools: Taking Charge of Change* (2nd ed.). Newbury Park, CA: Corwin/Sage.

Goldring, E. B., Spillane, J. P., Huff, J., Barnes, C., and Supovitz, J. (2009). Measuring the instructional leadership competence of school principals*. Leadership and Policy in Schools, 8,* p. 1-31.

Goldring, E. B. & Vye, N. (2004). We must model how we teach: Learning to lead with compelling models of professional development. In. W. Hoy and C. Miskel *(Eds). Educational Administration, Policy and Reform*. Pages. 189-218. Greenwich, CN: IAP.

Grant, J. S., & Davis, L. L. (1997). Selection and use of content experts for instrument development. *Research in Nursing and Health , 20*, 269-274.

Greeno, J. G. (1989). A perspective on thinking. *American Psychological Association, 44*(2), 134-141.

Griffith, J. (2003). Relation of principal transformational leadership to school staff job satisfaction, staff turnover, and school performance. *Journal of Educational Administration, 42*(3), 333-356.

Guskey, T. (2000). *Evaluating Professional Development*. Thousand Oaks, CA: Sage.

Hale, E. L., & Moorman, H. N. (2003). *Preparing school principals: A national perspective on policy and program innovations.* Washington, D.C.: Institute for Educational Leadership and Edwardsville, IL: Illinois Education Research Council.

Hallinger, P. (2001). A review of two decades of research on the principalship using the principal instructional management rating scale. Paper presented at the annual meeting of the American Educational Research Association. Seattle, WA.

Hallinger, P. (2005). Instructional leadership and the school principal: A passing fancy that refuses to fade away. *Leadership and Policy in Schools, 4,* 221-239.

Hallinger, P., & Heck, R. H. (1996a). The principal's role in school effectiveness: An assessment of methodological progress, 1980-1995. In K. Leithwood, J. Chapman, D. Corson, P. Hallinger, & A. Hart (Eds.), *International Handbook of*

Educational Leadership and Administration (p. 723-783). The Netherlands: Kluwer Academic.

Hallinger, P., & Heck, R. H. (1996b). Reassessing the principal's role in school effectiveness: A review of empirical research, 1980-1995. *Educational Administration Quarterly*, *32*(1), 5-44.

Hallinger, P., Leithwood, K., & Murphy, J. (1993). *Cognitive Perspectives on Eductional Leadership.* New York: Teachers College Press.

Hallinger, P., & Murphy, J. (1985). Assessing the instructional leadership behavior of principals. *Elementary School Journal, 86*(2), 217-248.

Hallinger, P., & Murphy, J. (1986a). Instructional Leadership in Effective Schools. Educational Resources Information Center (ERIC). Retrieved October 15, 2007 from http://eric.ed.gov:80/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1f/37/e3.pdf.

Hallinger, P., & Murphy, J. (1986b). The social context of effective schools. *American Journal of Education, 94*(3), 328-355.

Heck, R. (1992). Principals' instructional leadership and school performance: Implications for policy development. *Educational Evaluation and Policy Analysis, 14*(1), 21-34.

Hess, F. M. (2003). Lifting the barrier. *Education Next,* Fall, 12-19.

Hess, F. M., & Kelly, A. (2007). Learning to lead: What gets taught in principal-preparation programs. *Teachers College Record, 109*(1), 244-274.

Hill, H. C., Schilling, S. G., & Ball, D. L. (2003). *Developing Measures of Teachers' Content Knowledge for Teaching.* Ann Arbor, MI: University of Michigan.

Jackson, B. L., & Kelley, C. (2002). Exceptional and innovative programs in educational leadership. *Educational Administration Quarterly, 38*(2), 192-212.

Kane, M. T. (2006). Validation. In R. L. Brennan (eds), *Educational Measurement.* West Port, CT: Praeger Publishers. 17-64.

Kersting, N. (2008). Using Video Clips of Mathematics Classroom Instruction as Item Prompts to Measure Teachers' Knowledge of Teaching Mathematics. *Educational and Psychological Measurement*, *68*(5), 845-861.

Knapp, M., Copland, M., & Talbert, J. (2003). *Leading for learning: Reflective tools for school and district leaders.* Seattle: Center for the Study of Teaching and Policy, University of Washington.

Lampert, M., & Ball, D. (1998). Teaching multimedia and mathematics: Investigations of real practice. *The Practitioner Inquiry Series*, NY: Teachers College Press.

Leithwood, K. A., Begley, P.T., and Cousins, J. B. (1992). *Developing Expert Leadership for Future Schools.* London: Falmer Press.

Leithwood, K. A., & Jantzi, D. (2005). A review of transformational school leadership research, 1996-2005. *Review of Educational Research,* 52(3), 309-339.

Leithwood, K. A., Seashore Louis, K., Anderson, S., Wahlsrom, K. (2004). *How leadership influences student learning*. New York, NY: Wallace Foundation.

Leithwood, K. A., & Stager, M. (1986). Differences in problem-solving processes by moderately and highly effective principals. Paper presented at the annual American Education Research Association conference in San Francisco, CA.

Leithwood, K. A., & Stager, M. (1989). Expertise in principals' problem solving. *Educational Administration Quarterly, 25*(2), 126-161.

Leithwood, K. A., and Steinbach, R. (1995). *Expert Problem-Solving: Evidence from School and District Leaders.* Albany, NY: State University of New York Press.

Leithwood, K. A., and Steinbach, R. (1993a). The relationship between variations in patterns of school leadership and group problem-solving processes. In P. Hallinger, K. Leithwood, and J. Murphy (Eds.), *Cognitive Perspectives on Educational Leadership*. New York: Teachers College Press, 103-129.

Leithwood, K. A., & Steinbach, R. (1993b). Total quality leadership: Expert thinking plus transformation practice. *Journal of Personnel Evaluation in Education 7*(4), 311-337.

Leithwood, K., Steinbauch, R., & Raun, T. (1995). Prospects for organizational learning in expertly managed group problem solving. In K. A. Leithwood (Ed.), *Effective School District Leadership: Transforming Politics in Education.* Albany, NY: State University of New York Press.

Levine, A. (2005). *Educating School Leaders*. New York: The Education School Project.

Lynn, M. (1986). Determination and quantification of content validity. *Nursing Research*, *35*, 382-385.

Martin, W. J., & Willower, D. J. (1981). The managerial behavior of high school principals. *Education Administration Quarterly, 17*(1), 69-90.

McCarthy, M. (1999). The evolution of educational leadership preparation programs. In J. Murphy and K. S. Louis (Eds.), *Handbook of Research on Educational Administration* (pp 119-139). San Francisco, CA: Jossey-Bass.

McCarthy, M. M. (1999). How are school leaders prepared? Trends and future directions. *Educational Horizons 77*(2), 74-81.

McCune, J. (1999). Thirst for knowledge. *Management Review,* 10-12.

Meijer, P.C., Verloop, N. and Beijaard, D. (1999). Exploring language teachers' practical knowledge about teaching reading comprehension, *Teaching and Teacher Education*, Vol. 15, pp. 59-84.

Mulkeen, T. A., & Cooper, B. S. (1989, March). *Implications of preparing school administrators for knowledge-work organizations*. Paper presented at the annual meeting of the Annual Educational Research Association, San Francisco, CA.

Murphy, J., Elliott, S. N., Goldring, E. B., & Porter, A. C. (2006). Learning-centered leadership: A Conceptual Foundation. New York, NY: The Wallace Foundation.

Miklos, E. (1983). Evolution of administration preparation programs. *Educational Administration Quarterly, 19*(3), 153-177.

Miles, M. B., & Huberman, M. (1994). *Qualitative data analysis* (2nd edition). Thousand Oaks, CA: Sage.

Nanda, A. (1996). *Implementing Organizational Change.* (Unpublished article, Harvard University, 1996). Retrieved from http://www.people.hbs.edu/ananda/papers/impOrgChg.pdf

National Policy Board for Educational Administration. (1995). *NCATE Program Standards.* Alexandria, VA: Educational Leadership Constituent Council.

Nelson, B. S., Benson, S., and Reed, K. M. (2004). *Leadership content knowledge: A construct for illuminating new forms of instructional leadership.* Paper presented at the annual meeting of the National Council of Supervisors of Mathematics in Philadelphia, PA.

Nelson, B. S. (forthcoming). *Thinking About Mathematics Instruction Principal Survey.* Materials provided through personal communication with research team at Education Development Center, in Newton, MA.

Nelson, B. S., Goldsmith, L. T., Johnson, G., & Reed, K. E. (2005). *Thinking about mathematics instruction: A preliminary investigation of elementary and middle school principals' leadership content knowledge for mathematics.* Paper presented at the annual meeting of the American Educational Research Association in Montreal, Canada.

Nelson, B. S., & Sassi, A. (2005). *The effective principal: Instructional leadership for high-quality learning.* New York, NY: Teachers' College Press.

Nelson, B. S., Stimpson, V. C., & Jordan, W. J. (2007). *Leadership content knowledge for mathematics of staff engaged in key school leadership functions.* Paper presented at the annual meeting of the University Council of Educational Administration in Washington, D.C.

Nissen, M. J., Willingham, D., & Hartman, M. (1989). Explicit and implicit remembering: When is learning preserved in amnesia? *Neuropsychologia, 27*(3), 341-352.

Nonaka, I. (1991). The knowledge-creating company. *Harvard Business Review,* 96-104.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory.* New York, NY: McGraw-Hill.

Pea, R. (1993). Practices of distributed intelligence and designs for education. In Salomon (ed.), *Distributed Cognitions.* Cambridge, MA: Cambridge University Press.

Pennington, D. (2003). *Essential Personality.* London: Hodder Arnold.

Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *Journal of Consumer Research, 21,* 381-392.

Petrosino, A. (2000). Mediators and moderators in the evaluation of programs for children: Current practice and agenda for improvement. *Evaluation Review, 24*(1), 47-72.

Polanyi, M. (1962). *Personal Knowledge.* Chicago, IL: University of Chicago Press.

Polanyi, M. (1962). Tacit knowing: Its bearing on some problems on philosophy. *Reviews of Modern Physics, 34*(4), 601-616.

Polanyi, M. (1966). *The Tacit Dimension,* New York: Doubleday and Company.

Polanyi, M. (1975). *Meaning,* Chicago: University of Chicago Press.

Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review, 68*(3), 79-91.

Richards, D., & Busch, P. A. (2005). Measuring, formalizing, and modeling tacit knowledge. Paper presented at International Conference on Artificial Intelligence and Applications in Innsbruck, Austria.

Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research, 27*(2), 94-105.

Ryle, G. (1949). *The Concept of Mind,* London: Hutchinson of London.

Sabers, D. S., Cushing, K. S., & Berliner, D. C. (1991). Differences among teachers in a task characterized by simultaneity, multidimensionality, and immediacy. *American Educational Research Journal, 28,* 63-88.

Salomon, G. (1993). *Distributed Cognitions.* Cambridge, MA: Cambridge University Press.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15,* 4-14.

Siegler, R. S. (1989). Mechanisms of cognitive development. *Annual Review of Psychology,* 40, 353-379.

Simon, H. (1957). A behavioral model of rational choice. *Models of Man, Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting.* New York: Wiley.

Smith, E. A. (2001). The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management, 5*(4), 311-321.

Smylie, M. A., Bennett, A., Konkol, P., & Fendt, C. R. (2005). What do we know about leaders?: A look at existing research and next steps for new study. In W. Firestone & C. Riehl (Eds.), *A New Agenda for Research in Educational Leadership* (pp. 138-155). New York: Teachers College Press.

Spillane, J. P. (2006). *Distributed Leadership.* San Francicso: John Wiley & Sons.

Spillane, J. P., Halverson, R., & Diamond, J. B. (2001). Investigating school leadership practice: A distributed perspective. *Educational Researcher, 30*(3), 23-28.

Stecher, B., Le, Vi-Nhuan, Hamilton, L., Ryan, G., Robyn, A., & Lockwood, J. R. (2006). Using structured classroom vignettes to measure instructional practices in mathematics. *Educational Evaluation and Policy Analysis, 28*(2), 101-130.

Stein, M. and Nelson, B. (2003). Leadership content knowledge. *Educational Evaluation and Policy Analysis, 25*(4), 423-448.

Sternberg, R. J., & Grigorenko, E. L. (2001). *The General Factor of Intelligence: How General Is It?* New Jersey: Lawrence Erlbaum Associates.

Sternberg, R. J., & Grigorenko, E. L. (2001). Practical intelligence and the principal. Retrieved 7-29-07 from http://www.temple.edu/lss/pdf/publications/pubs2001-2.pdf.

Sternberg, R. J., & Horvath, J. A. (1995). A prototype view of expert teaching. *Educational Researcher, 24*(6), 9-17.

Sternberg, R. J., & Horvath, J. A., eds. (1999). *Tacit Knowledge in Professional Practice: Researcher and Practitioner Perspectives,* New Jersey: Lawrence Erlbaum Associates.

Sternberg, R. J., Wagner, R. K., Williams, W. M., & Horvath, J. A. (1995). Testing common sense. *American Psychologist, 50*(11), 912-927.

Streiner, D. L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment, 80*(1), 99-103.

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches.* Thousand Oaks, CA: Sage.

Tucker, M. S. & Codding, J. B. (Eds). (2002) The principal challenge: Leading and managing schools in an era of accountability. San Francisco: Jossey-Bass.

Wagner, R. K. (1987). Tacit knowledge in everyday intelligent behavior. *Journal of Personality and Social Psychology, 52,* 1236-1247.

Wagner, R. K., & Sternberg, R. J. (1985). Practical intelligence and real-world pursuits: The role of tacit knowledge. *Journal of Personality and Social Psychology, 49,* 436-458.

Wagner, R. K., Sujan, H., Sujan, M., Rashotte, C. A., & Sternberg, R. J. (1999). Tacit knowledge in sales. In R. J. Sternberg & J. A. Horvath (Eds.), *Tacit knowledge in professional practice* (pp. 155-182). Mahwah, NJ: Lawrence Erlbaum Associates.

Walz, C. F., Strickland, O., & Lenz, E. (1991). *Measurement in Nursing Research (2nd ed.).* Philadelphia: F. A. Davis.

Wassink, H. (2000). The Use of Cause Maps as Indicator for the Cognitive aspects of School Leaders' Work: Development of an Instrument. Paper presented at the Onderwijs Research Dagen, Leiden.

Wassink, H., Sleegers, P., & Imants, J. (2003). Cause maps and school leaders' tacit knowledge. *Journal of Educational Administration, 41*(5), 524-546.

Weiss, C. H. (1997). Theory-based evaluation: past, present, and future. In Rog & Founier, 1997, 41-56.

Williams, W. H., & Sternberg, R. J. (unpublished). *Success acts for managers*. Ithaca, NY: Cornell University Dept. of Human Development.