STUDENT ASSESSMENT:
WHAT DO SUPERINTENDENTS NEED TO KNOW?

The days when a public school superintendent could be successful by being a good organizational manager are over. Throughout the 1990s and into the first decade of the twenty-first century a transformation of the superintendency has occurred where school leaders are called upon to be instructional leaders as well as managers. Increasingly, student assessment and accountability in curriculum and instruction are at the heart of district level educational leadership. More than ever before, being a superintendent means being knowledgeable in classroom assessment, school and district level assessment, and the management and analysis of student assessment data to make teaching and school decisions (Elmore, 2000; Johnson, 2002).

By the late 1990s nearly all states had implemented a state student assessment system with higher stakes for schools and school districts than ever before. And most recently, federal legislation in the *No Child Left Behind Act* (NCLB) of 2001 has increased the accountability pressure on school districts even more. This external call for student assessment and accountability has coincided with calls from within the educational leadership community for school leaders to be instructional leaders as well as organizational managers (Arter, Stiggins, Duke, & Sagor, 1993; Bernhardt, 2004; Berube, Gaston, & Stepans, 2002; Cawelti, 2004; Leithwood, Aitken, & Jantzi, 2001; Popham, 2001; Reeves, 2004; Schlechty, 2001).

Today's superintendents themselves believe that assessment and accountability are among their most pressing instructional leadership concerns. In *The 2000 American Association of School Administrators Ten–Year Study of the American School Superintendent* (Glass, Bjork, & Brunner, 2000), a nationally representative sample of 2,262 superintendents was surveyed. When asked to rank the most important challenges facing them in their position, their second- and third-highest rankings out of 29 issues and challenges facing the superintendency were assessing or testing for learner outcomes and accountability, respectively.

In the policy environment of the beginning of the twenty-first century, superintendents are caught between the need to reconcile assessment for accountability with assessment to support instruction. Though this struggle was brought more to public attention by NCLB, school districts and their superintendents were already actively reforming their assessment systems prior to NCLB. In the Public Agenda report, *Rolling Up Their Sleeves: Superintendents and Principals Talk About What's Needed to Fix Public Schools* (Farkas, Johnson, & Duffett, 2003), superintendents in the focus groups and survey study of a national random sample of 1,006 public school superintendents surveyed in summer, 2003, reported that they were working hard to implement academic standards and accountability in their schools well before NCLB was enacted in 2002.

On the eve of the implementation of NCLB, Popham (2000) sounded an alarm to school leaders about the misuse of standardized tests

to measure educational quality. He decried the overuse of standardized achievement tests, whether published by testing companies or custom developed by states. And he charged superintendents with the moral responsibility of halting the rush to equate student achievement test scores with successful instruction. Among his recommendations were to (a) provide an intense and comprehensive assessment-literacy program for teachers and administrators; (b) offer carefully structured briefing sessions to educational policymakers regarding appropriate and inappropriate ways to evaluate schooling; (c) implement a meaningful assessment literacy program for parents; (d) encourage the creation of autonomous parent action groups; (e) review, under carefully controlled conditions, the actual high-stakes tests being used; and (f) devise and implement more valid credible evaluative schemes.

In the study reported here we reviewed the literature on accountability and assessment in order to design a questionnaire to survey superintendents across Wyoming on their existing and needed knowledge about student assessment. Results on the presence or absence of gaps in knowledge that is deemed important by respondents and/or the literature can be used by colleges and universities in Wyoming, and perhaps elsewhere, to improve superintendent certification programs.

Accountability and Assessment

Accountability, until recently, has simply meant test scores and using test scores to hold schools and teachers accountable for student learning. In contrast, holistic accountability or student-centered accountability provides district level administration with a systematic process to examine teaching practices, curriculum, and leadership decisions (Reeves, 2004). What does the superintendent need to know about student-centered accountability?

Student-centered or holistic accountability is not something done to teachers. Student-centered accountability requires the superintendent to look at qualitative and quantitative data that represent all the extraordinary steps teachers and students take to improve learning. Reeves (2004) pointed out that student-centered accountability relies on assessment gathered from the four categories of teaching, leadership, curriculum, and parent involvement. The superintendent must take the lead in defining a plan for the identification, collection, and reporting of relevant data that address these four categories.

Ross (2002) suggested that superintendents and school boards needed to rethink accountability. Accountability should deliberately connect all key players in the schooling equation: students, parents, teachers, building leadership, and superintendents. Superintendents should be asking questions not only about schools as a whole, but about specific principals, teachers, and classrooms. He reported that in order for districts to be accountable they must align their internal assessments with state and national assessments, recognize the cause and effects of what the ongoing assessment data demonstrate, and deliberately connect all key players in

the schooling equation. It is the responsibility of the superintendent to ensure that all stakeholders involved in the schooling equation know and understand student assessment data and their individual role in the process of data collection, interpretation, and presentation.

Recent literature related to the knowledge of student assessment needed by superintendents reflects three facets: planning, implementation of data-based decision making, and technical assessment knowledge. These are consistent with various leadership standards related to student assessment knowledge advocated by educational leadership professional organizations.

Planning

Mintzberg (1994) wrote about the need to define planning and then to answer the question, "why plan?" He defined planning as "a formalized procedure to produce an articulated result, in the form of an integrated system of decisions" (Mintzberg, 1994, p. 12). He found that organizations plan in order to coordinate their activities, ensure that the future is taken into account, control others in the organization, and formalize rational thinking. Leithwood, Aitken, and Jantzi (2001) defined strategic planning as a way to build commitment among organizational members to a shared vision for the future. But for some districts the strategic plan creates unmanageably large numbers of priorities making it impossible to monitor and track improved results (Leithwood, Aitken, & Jantzi, 2001; Reeves, 2004).

Typically, at least until recently, plans have been devised largely for the benefit of external sources, such as central office administrators or to meet state and federal mandates (Johnson, 2002). It is now better understood that superintendents need to start with the board-determined district goals and build a student-centered accountability plan around those goals. Reeves (2004) strongly advocated for no more than six goals. He argued the district leader should keep in mind the cardinal rule of measurement which states that it is more effective to measure a few things frequently rather than many things once a year. Schmoker (2001) supported this when he wrote, "keep it simple" (p. 121).

The superintendent's knowledge of student assessment should assist in the district's planning and direction-setting activities. The superintendent is responsible for freeing up the time and supporting the effort of teachers, parents, community members, and the leadership team in coming to consensus on establishing priorities and allocating the needed resources. Planning should ensure that all faculty members know their goals, areas of weakness for each goal, and their time to meet to plan for the improvement of instruction to reach their goals (Schmoker, 2001).

The accountability plan should provide for objective measurement of performance and hold all stakeholders accountable for results (American Association of School Administrators, 2003). By using multiple measures of achievement, students, teachers, administrators, parents, the school board, and the community all share responsibility for school

performance (Reeves, 2004). Data collected from teaching practices, curriculum implementation, parent involvement statistics, and student achievement data must be linked to the six or fewer district goals. The monitoring system should be selective and focus only on those elements for which there is evidence of impact on important outcomes such as student achievement, teaching, parent involvement, and leadership (Leithwood, Aitken, & Jantzi, 2001; Reeves, 2004).

Cawelti (2004) studied four districts that demonstrated gains in student achievement among all student subgroups while serving substantial numbers of low-SES and/or students of color. His research team identified five factors that contributed to the successes of these four districts. These factors were motivation by the state's accountability plan; pressure placed on district leaders from community members; stronger leadership and focus from superintendents; district identification and adoption of instructional strategies that better supported student learning; and the state's unwillingness to continue accepting low performance from student subgroups. Cawelti (2004) found that the net effect of all these changes was to carve out new roles for the superintendency.

Holistic accountability is more than test scores. Reeves (2004) suggested that administrators consider the antecedents of educational excellence such as supporting best practice teaching strategies to include assessment, feedback, and collaboration. These strategies require the superintendent, as instructional leader, to facilitate the planning and implementation of a district vision, goals, and a student-centered accountability plan. Superintendents must take every available opportunity to help principals and teachers use student assessment data effectively to plan for improving student achievement. This is the key reason for data collection. Ezarik (2002) suggested key data-gathering steps for districts, such as developing a district plan for a data-driven culture and conducting an audit to determine a data-use policy. She also stressed the importance of involving teachers in self-assessment, reflection, and staff development to meet the needs of students, based on needs identified in student achievement data.

In sum, planning for the improvement of student achievement must involve the board of education, the superintendent, principals, teachers, parents, community members, and students. Decisions made in the planning process must include the use of quantitative and qualitative data collected from students, teachers, parents, and leadership. The focus of the plan must be at the classroom and student levels to support instruction and learning. "No significant increase in student achievement will be forthcoming unless students receive higher quality and more focused instruction in their classrooms" (Cawelti, 2004, p. 10).

While the board of education is ultimately responsible for student achievement, the superintendent is charged with taking the planning stage to the next stage of implementation. It is the superintendent's responsibility to ensure the plan gets implemented and that the results are communicated to the public.

Implementation of Data-Based Decision Making

Research supports the use of data in making decisions regarding improvement of student achievement (Cawelti, 2004; DuFour, 1995; Lambert, 2003; Leithwood, Aitken, & Jantzi, 2001; Marzano, 2003; Popham, 2001; Reeves, 2004; Schmoker, 1996; Stiggins, 1997; Waddle, 2002). Superintendents need to model the use of student assessment data to make decisions by including board members, principals, and teachers in the data driven decision-making process. Data can help superintendents, principals, parents, community members, and, most of all, teachers, to make decisions about instructional strategies, resources, and classroom teacher support. Superintendents need to advocate strongly for the *use* of student assessment data and not just the *collection* of data (Reeves, 2004).

District administrators must understand the importance of their role in collecting, interpreting, and communicating student assessment data to all stakeholders. Questions to ask are: "how will we use data; why data; how is the district currently using data; and who has access to what data" (Bernhardt, 2004; Johnson, 2002). The superintendent is ultimately responsible for coordinating the data collection, regulation, and reporting of progress to the staff, board, and community. Kotter (1996) stated that district leaders must create a sense of urgency by continually examining student assessment data, ensuring that the faculty and community understand what the data are saying, and then leading the decision-making process to support continual improvement of student achievement.

One example of the powerful effects of the use of data in support of instructional improvement was reported by Vail (1999). In Oxford School District, Mississippi, the initiative of a school board and new superintendent were instrumental in moving a district from "mediocre" on the state's rating system based on achievement test scores to a Level 3, "successful," and then to one of only 12 school districts in the state rated at that time as Level 5, "exceptional." This occurred in only a 3-year period beginning in 1993. According to Vail (1999), a key reason for the quick change was that the superintendent developed an assessment system for the district where individual student progress could be monitored. The superintendent "can crunch numbers with the best of them. He has students' test scores on his computer where he can readily pull up test data and generate various reports and comparisons" (p. 26). As a result of close study of district assessment data, a radical change in the reading program was implemented and the assessment system was able to track individual student progress beginning at second grade.

The superintendent should be aware of central office strategies proven to support student achievement. Schmoker (2001) suggested implementation of the fundamentals of improvement. These fundamentals included involving all staff in data analysis and goal setting, providing the time and tools to support effective teamwork, supporting district-based research and development, lessening the fear of state and standardized test results, using standardized tests results for the students' benefit, creating

end-of-course assessments, conducting periodic assessments and data analysis, and empowering instructional teams.

Data about all parts of the district need to be analyzed on a regular basis in order to understand the entire system. Members of the school community must be able to gather, analyze, and accurately understand which strategies are not working and what to do differently to get better results (Bernhardt, 2004). Stakeholders need data analysis to lead to continuous improvement, which requires measuring and evaluating school processes on an ongoing basis. Bernhardt (2004) suggested the implementation of Continuous Improvement Continuums at the district level adapted from the Malcolm Baldridge Award Program. The continuum provides an authentic means for measuring district wide improvement and growth; it provides an ongoing self-assessment of the district (Bernhardt, 2004). This process involves all staff, students, parents, and community stakeholders in the self-assessment. Results from the self-assessment are used to acknowledge accomplishments, to set goals for improvement, and to keep community partners apprised of district progress (Bernhardt, 2004).

Access to the data is of utmost importance. Staff needs ready access to current data in order to analyze, report, and use data to make informed decisions about improving instruction and student learning. Bernhardt (2004) strongly advocated for a data warehouse. She explained that a data warehouse is designed to allow for the manipulation, updating, and control of multiple databases that are connected to one another via individual student identification numbers. Data warehouse systems are expensive, therefore, Bernhardt (2004) recommended spending time up front to decide how to select, implement, and maintain the data warehouse. This will be a major budget and staffing issue.

In conclusion, effective use of data can support effective instruction and learning to improve student achievement. Student-centered accountability provides a systemic examination of teaching practice, curriculum, and leadership decisions (Reeves, 2004). Superintendents are charged with the responsibilities of building a data-friendly culture, ensuring that school community members understand their roles and responsibilities, providing ongoing professional development that fosters new skills, and establishing a system focused on continuous improvement (American Association of School Administrators, 2003). Last, but not least, an extremely important piece to the student-centered accountability plan is to establish and implement celebrations of successes.

Technical Assessment Knowledge

The ability to plan assessment systems, to implement data-based decision making, to improve the classroom assessment used by teachers, and to communicate student assessment data requires technical knowledge in the area of student assessment. Even before NCLB there were calls for increased assessment literacy among teachers, principals, superintendents, school boards, and the public. For example, Arter, Stiggins, Duke, and Sagor (1993) articulated a set of 12 assessment competencies

for principals and, by extension, superintendents. According to Arter et al. (1993), these instructional leaders should:

1. Know the attributes of sound student assessment and how to apply them to the assessments used in the school building;

2. Know the attributes of a sound student assessment *system* [italics added] and how to apply them to the assessment systems used in the building;

3. Know issues related to ethical and inappropriate use of assessment information and how to protect students and staff from misuses;

4. Know the importance and features of assessment policies and regulations that contribute to the development and use of sound assessments at all levels of use;

5. Know the importance of and be able to work with staff members to set specific goals for integration of assessment into instruction, and to assist teachers in reaching those goals;

6. Know the importance of and be able to evaluate teachers' classroom assessment competencies and build such evaluations into the supervision process;

7. Know the importance of and be able to plan and present, or secure the presentation of, staff development experiences that contribute to the development and use of sound assessment at all levels of decision making;

8. Know the importance of and how to use assessment results for instructional improvement at the building level;

9. Know how to accurately analyze and interpret building-level assessment information;

10. Be able to act effectively upon assessment information;

11. Know and create the conditions necessary for the appropriate use of achievement information; and

12. Be able to communicate effectively with all interested members of the school community about assessment results and their relationship to instruction. (p. 5)

Stiggins (1997) supported the need for leaders to identify effective instructional strategies and find the most effective instructional strate-

gies that have the biggest impact on student achievement. Superintendents must be assessment literate, they must know how sound assessment relates to quality instruction, and they must strive to maintain a balanced use of assessments (Stiggins, 1997).

Impara, Plake, and Merwin (1994) sought to learn what the knowledge base for assessment among school administrators should be. In their study, a sample of 1,685 administrator members of the American Association of School Principals (AASA), the National Association of Secondary School Principals (NASSP), and the National Association of Elementary School Principals (NAESP) responded to a mailed survey in 1993. The five areas of assessment knowledge and skills receiving the highest importance ratings by respondents were ability to (a) evaluate school or system assessment or testing programs, (b) be aware of changes in testing and assessment practices, (c) communicate test/assessment results to the media and general public, (d) develop a plan for assessment implementation for your building or school system, and (e) read the current literature on assessment.

They rated their own level of knowledge and skills highest for (a) know the purposes of different kinds of testing, e.g., achievement, IQ, diagnostic; (b) know terminology found in reports for standardized tests, such as grade equivalent scores, percentile scores, and percentile bands; and (c) understand the concepts associated with testing, e.g., reliability, validity.

The highest four ratings of need for knowledge were (a) understand the appropriate linkage between curriculum content and different kinds of tests; (b) know terminology found in reports for standardized tests, such as grade equivalent scores, percentile scores, and percentile bands; (c) know the purposes of different kinds of testing, e.g., achievement, IQ, diagnostic; and (d) understand the concepts associated with testing, e.g., reliability, validity.

Since the knowledge and skills they reported having and needing were so similar across superintendent, elementary, and secondary principals, the authors concluded that "even though superintendents and principals perform the tasks at different levels of emphasis or frequency, the amount of skill and knowledge they have and need to perform these tasks are very similar" (Impara et al., 1994, p. 526). Though the Impara et al. (1994) study was conducted nearly a decade before the implementation of NCLB, the need for this technical assessment knowledge and skill has only increased in the current policy environment of the school superintendent.

Leadership Standards

The need for knowledge of student assessment is also prominent in the standards of professional organizations. The Educational Leadership Constituents Council (ELCC) created the most recent set of standards for both building level and district level leadership positions (Education Leadership Constituent Council, 2002). The ELCC Standards (2002) are

influencing certification requirements including testing, course work, and experiences for superintendents. The six ELCC standards focus on vision, culture, management, community, stewardship, and context, and are framed using knowledge, skills, and dispositions necessary in each of the standards. Candidates are asked to provide evidences of proficiency in each of the six standard areas. The importance of knowledge in student assessment and accountability systems is also prominent in these standards. Three of these standards specifically address a candidate's ability to demonstrate use of assessment data.

Other professional organizations such as AASA, the Association for Supervision and Curriculum Development (ASCD), and NAESP have published explicit criteria for educational leaders in student assessment. Among the assessment-related responsibilities of superintendents frequently listed are (a) establishing procedures for collecting data about student learning and regularly sharing it with school staffs; (b) selecting and developing assessment instruments that are aligned with high standards for student learning; (c) communicating frequently about student learning to parents, the community, and media; (d) making student learning a primary reference point for decision making and resource allocation; (e) developing policies, procedures, and culture where student assessment data are regularly used in visioning, goal setting, and planning for district improvement and accountability; and (f) developing and maintaining data management and reporting systems that support both internal and external needs for student assessment information.

Superintendent Preparation

Some critics have claimed that programs to prepare school system leaders have been inadequate. One observation about the superintendency made by Cooper, Fusarelli, Jackson, and Poster (2002) addressed this concern:

> Given their importance, as the top leaders of America's school systems, the lack of scholarly attention paid to superintendent preparation speaks volumes about the difficulty of conceptualizing and studying the process of educating, credentialing, and understanding the whole process: recruiting, educating, exposing superintendents to the concepts and practices for being successful leaders, and placing them in their new positions. (p. 243)

In particular, there has been recognition that preparation of educators at all levels in assessment of student learning has been inadequate. In the early 1990s there were calls for the need to increase the assessment literacy among all educators (Popham & Hambleton, 1990). Stiggins (1995) reported that little progress had been made by 1995 in improving the assessment literacy of teachers, principals, and building administrators. He found that few colleges were training administrators adequately in classroom assessment and "few local or state agencies have in place the personnel officers or building administrators who are capable of evaluating job candidates on their assessment capabilities or performance" (p. 239).

Indeed, there is considerable evidence that educational leaders are still not as well prepared to provide the leadership in assessment and accountability as they need to be (Black, 1998; Impara & Plake, 1996; Leithwood, Aitken, & Jantzi, 2001; Reeves, 2004; Levine, 2005).

The professional literature and leadership standards present a daunting challenge to superintendents of today. Educational leaders are required to be knowledgeable not only in traditional areas of organizational management, board and community relations, resource management, and personnel, but increasingly in newer areas of classroom assessment and accountability systems. Practicing school leaders and the programs that prepare them have been hard-pressed to keep up with increasing need for assessment and accountability knowledge. In order to keep the superintendent preparation program at the University of Wyoming current with the needs of superintendents and to provide instruction based on best practices, we sought to augment what we know from the professional literature with more direct data from practicing superintendents from this small frontier state about how they rate their level of knowledge and the importance of that knowledge. We have combined ideas from the literature with our findings to improve superintendent preparation and professional development in Wyoming.

The Research Study

Sample

All the superintendents of the 48 Wyoming school districts were asked to participate in a survey. Thirty of 48 (62.5%) responded. Nine (30%) had a master's degree as their highest degree; twelve (40%) had an Educational Specialist; and seven (23.3%) had a doctorate. Seven (25%) had been a superintendent 0–2 years, seven (25%) for 3–6 years, seven (25%) for 7–16 years, and seven (25%) for 17 years or longer. One reported having been a superintendent for 35 years. The mean number of years they had been superintendents was 9.3 ($SD = 8.9$), ranging between 2 and 35. The mean district enrollment for our respondents was 2,168 students, ranging in size from 112 to 13,000 with a median enrollment of 800.

Questionnaire

Questionnaire development started with a review of the literature. Several studies (Arter, et al., 1993; Impara, et al, 1994; Impara & Plake, 1996) were reviewed to support the development of the survey format. The review of literature revealed three major aspects of what superintendents know and need to know about student assessment: planning, implementation, and technical assessment knowledge. Questionnaire items were developed based on these aspects.

The survey consisted of 64 items, divided into four parts. Part A included 28 statements addressing the question, "how important is it for superintendents to know *X* about assessment of student learning?" Super-

intendents responded using a 5-point scale ranging from "not important to know," given a value of 1, to "extremely important to know," given a value of 5. Part B requested participants to rate the same 28 statements using a 5-point rating scale to identify their own level of knowledge. The following rating scale was used for that section:

1. Non-use: I am not aware of this area of knowledge.

2. Awareness: I can describe, discuss, and/or explain this area of knowledge.

3. Application: I have experience using this knowledge.

4. Integration: I implement and practice this area of knowledge.

5. Transfer: I have developed a sense of expertise in this area and I can train and mentor others in this area of knowledge.

The statements were organized in sections related to planning, implementation of data-based decision making, and technical assessment knowledge, consistent with the three constructs identified from the review of the literature.

In Part C, the following five open-ended questions were presented to gain insight into the opinions of the respondents:

1. What have we not listed that would be important for a superintendent to know about assessment of student learning?

2. What have we not listed that you currently know about student assessment?

3. What should the superintendent's role be in the area of student assessment?

4. What would you like to know more about in the area of assessment?

5. How do you stay current on "best practices" in the area of assessment of student learning?

A demographic section concluded the questionnaire. Superintendents were asked to identify their highest degree, years of experience as a superintendent, and their district's enrollment.

Procedure

The questionnaire was administered by one of the researchers at the annual meeting of the Wyoming School Boards Association in November 2003. Explicit administration instructions were written in a

cover letter attached to the questionnaire. The purpose of the study and directions were explained prior to administration. The superintendents were asked to complete the survey and return it to the researcher or to take it with them and mail it to the researchers.

Results

Importance of Assessment Knowledge

In the first part of the questionnaire superintendents were asked: "How important is it for superintendents to know *X* about assessment of student learning?" They were asked to rate 28 statements from "not important to know" (1) to "extremely important to know" (5). In general superintendents rated nearly all 28 items as "important" or "extremely important" to know. Among the top seven highest rated items (see Table 1) were two related to planning, where superintendents thought it very important to be able to use data and research in long-range planning for evaluating student improvement, and to determine what data need to be collected. The other five items were related to technical assessment knowledge including knowledge of the purposes of different assessments, testing terminology, and how to make valid interpretations of test results, interpret test scores for others, and communicate assessment information to others.

Table 1

Most Highly Rated Assessment Knowledge

Questionnaire item	Mean
Use data and research methods to develop long-range plans for evaluating improvement in student achievement (Planning)	4.60
Communicate assessment information to others (e.g. other administrators, Board of Education, principals, teachers, community members, and media) (Technical)	4.57
Interpret test scores for others (e.g. colleague administrators, Board of Education, principals, teachers, community members, and media) (Technical)	4.47
Know the purposes of different kinds of assessment (e.g. classroom, large scale, diagnostic) (Technical)	4.40
Understand terminology found in reports from standardized tests (e.g. NCE scores, percentile scores, cut scores, and confidence intervals) (Technical)	4.40

(continued)

Table 1 *(continued)*

Questionnaire item	Mean
Understand variables that affect the valid interpretation of test results (e.g. student characteristics, curriculum match, and student motivation) (Technical)	4.33
Determine what data to collect based on what is important to know about student performance, teacher quality, parent and community satisfaction, and district goals (Planning)	4.33

Two of the lowest rated items were related to planning: lead the selection and development of assessments aligned with standards, and maintain data management and reporting systems (see Table 2). One item related to implementation: "Appropriately use student assessment information in personnel evaluation." Four related to technical assessment knowledge: design assessments, reliability studies for assessments, a standard-setting study, and understand alternative assessment techniques.

Table 2

Least Highly Rated Assessment Knowledge

Questionnaire item	Mean
Design assessments (Technical)	3.10
Design a consistency (reliability) study for district assessments and the assessment system (Technical)	3.53
Design a standard-setting study for district assessments (Technical)	3.63
Lead the selection and development of assessment instruments that are aligned with standards for student learning (Planning)	3.67
Understand when alternative assessment techniques are appropriate (Technical)	3.73
Maintain the data management and reporting systems, which support both internal and external needs for student assessment information (Planning)	3.76
Appropriately use student assessment information in personnel evaluation (Implementation)	3.80

Level of Assessment Knowledge

Next, superintendents were asked, "what do you know about assessment?" They were asked to rate the same 28 statements, now with reference to their own level of knowledge. Overall the responses were much more varied than for Part A, and the average ratings were lower. Among the planning items rated highest in knowledge level were: "Use data and research for long-range planning to evaluate improvement in student achievement," "design a process for aligning district assessments with district and state standards," and "establish procedures for collecting and sharing data about student learning regularly with school staff" (see Table 3). Only one item relating to implementation was rated highest, "evaluate the district assessment plan." Four items related to technical assessment knowledge were rated at a high knowledge level: "Know the purposes of different kinds of assessments," "understand standardized testing terminology," "interpret test scores for others," and "communicate assessment information to others."

Table 3

Items Rated Highest in Knowledge Level

Questionnaire item	Mean
Communicate assessment information to others (e.g. other administrators, Board of Education, principals, teachers, community members, and media) (Technical)	3.87
Interpret test scores for others (e.g. colleague administrators, Board of Education, principals, teachers, community members, and media) (Technical)	3.83
Understand terminology found in reports from standardized tests (e.g. NCE scores, percentile scores, cut scores, and confidence intervals) (Technical)	3.83
Know the purposes of different kinds of assessment (e.g. classroom, large scale, diagnostic) (Technical)	3.63
Establish procedures for collecting and sharing data about student learning regularly with school staff (Planning)	3.57
Evaluate the district assessment plan (Implementation)	3.57
Design a process for aligning district assessments with district and state standards (Planning)	3.53
Use data and research methods to develop long-range plans for evaluating improvement in student achievement (Planning)	3.53

Among the planning-related items, three were rated at superintendents' lowest levels of knowledge: "Lead the selection and development of assessment instruments aligned with standards," "develop data management and reporting systems," and "maintain data management and reporting systems" (see Table 4). One item related to implementation was rated lowest, "appropriately use student assessment information in personnel evaluation." Three items related to technical assessment information were rated lowest in knowledge level: "Design assessments," "design standard-setting studies for district assessments," and "design reliability studies for district assessments."

Table 4

Items Rated Lowest in Knowledge Level

Questionnaire item	Mean
Maintain the data management and reporting systems that support both internal and external needs for student assessment information (Planning)	2.60
Design a consistency (reliability) study for district assessments and the assessment system (Technical)	2.60
Appropriately use student assessment information in personnel evaluation (Implementation)	2.77
Design a standard-setting study for district assessments (Technical)	2.77
Design assessments (Technical)	2.77
Develop data management and reporting systems that support both internal and external needs for student assessment information (Planning)	2.87
Lead the selection and development of assessment instruments that are aligned with standards for student learning (Planning)	2.90

Difference Between Importance and Level of Knowledge

An analysis of the difference between ratings of the importance of knowledge and the level of knowledge was conducted. In all cases the importance rating was higher than the knowledge level rating. The three planning items that had the largest difference between rating of importance and level of knowledge were "maintain the data management reporting system," "use data and research methods to develop long-range plans for evaluating improvement in student achievement," and "develop a data management and reporting system," (see Table 5). Four items related to

implementation were among those with the largest discrepancy. These were "provide training in the development and use of performance assessments," "identify weaknesses in instruction using student assessment information," "use computer technology in the assessment and accountability system," and "appropriately use student assessment information in personnel evaluation." Only one item relating to technical assessment knowledge appeared here. This was "design a body of evidence system for high school graduation."

Table 5

Largest Differences Between Ratings of Importance and Knowledge Level

Questionnaire item	Mean difference
Maintain the data management and reporting systems that support both internal and external needs for student assessment information (Planning)	1.20
Provide training in the development and use of performance assessments (Implementation)	1.13
Identify weaknesses in instruction using student assessment information (Implementation)	1.10
Use computer technology in the assessment and accountability system (Implementation)	1.07
Design a body of evidence system for high school graduation (Technical)	1.07
Use data and research methods to develop long-range plans for evaluating improvement in student achievement (Planning)	1.07
Appropriately use student assessment information in personnel evaluation (Implementation)	1.03
Develop data management and reporting systems that support both internal and external needs for student assessment information (Planning)	1.00

Items with the lowest discrepancy between importance of knowledge and level of knowledge included three items related to planning (see Table 6). The lowest discrepancy between importance of knowledge and level of knowledge were: "designing a process for aligning district assessments with standards," "identifying student-learning activities to align with assessments," and "establishing procedures for collecting and sharing student learning data regularly with school staff." Only one item related to implementation appeared here, "appropriately using assessment

information in student grades." Four items relating to technical assessment knowledge were rated low in discrepancy. These were: "understanding standardized testing terminology," "designing assessments," "understanding when alternative assessment techniques are appropriate," and "interpreting test scores for others."

Table 6

Smallest Differences Between Ratings of Importance and Knowledge Level

Questionnaire item	Mean difference
Design assessments (Technical)	0.33
Understand when alternative assessment techniques are appropriate (Technical)	0.53
Appropriately use assessment information in student grades (Implementation)	0.57
Understand terminology found in reports from standardized tests (e.g. NCE scores, percentile scores, cut scores, and confidence intervals) (Technical)	0.57
Establish procedures for collecting and sharing data about student learning regularly with school staffs (Planning)	0.60
Interpret test scores for others (e.g. colleague administrators, Board of Education, principals, teachers, community members, and media) (Technical)	0.63
Identify student-learning activities that align with district and state assessments (Planning)	0.67
Design a process for aligning district assessments with district and state standards (Planning)	0.67

Open-Ended Questions

We asked several open-ended questions. The first of these was, "what have we not listed that would be important for a superintendent to know about assessment of student learning?" A recurrent theme found in superintendents' comments was the idea that what a superintendent needs to know is somewhat dependent on district size. Several pointed out that superintendents of large districts have a larger staff and are able to delegate many of the assessment-related activities. But superintendents of small districts must know it all. Other important knowledge themes identified by superintendents were: understanding the difference between high

stakes testing and testing for achievement growth; recognizing the changes necessary because of NCLB; being able to communicate with the public in a way that all stakeholders can understand; knowing legal requirements for schools related to assessment; and learning how to lead building administrators who are leading teachers in proper use of assessments.

When asked "what have we not listed that you currently know about student assessment," comments were that not all assessments are appropriate for determining student achievement. Other comments stated that assessment is not an exact science, and we should consider unintended and unwanted consequences and recognize the importance of growth by individual students.

When asked, "What should the superintendent's role be in the area of student assessment?" the major theme of comments was that the role of the superintendent depends on district size. Another question was, "what would you like to know more about in the area of student assessment?" The 12 responses had no common theme, but for the most part repeated specific ideas included on the questionnaire.

The last question asked superintendents, "How do you stay current on 'best practices' in the area of assessment of student learning?" The most predominant sources were reading professional journals and other documents ($n = 21$), followed by attending workshops or training sessions ($n = 15$). Several mentioned discussions with other professionals ($n = 6$), and working with other professionals ($n = 6$).

Three strong themes emerged from the comments made by respondents. One theme was that the superintendent must be a leader with vision who can lead building administrators to lead instruction. The second theme that emerged was that the superintendent must be the director and chief executive responsible for making sure the system works. The third major theme was that the superintendent must be a facilitator and leader of change.

Discussion

It must be kept in mind that the survey was a self-report of degrees of importance and knowledge by superintendents. It may be that superintendents who say they do not know enough about assessment should not be expected to know what they should know. And questionnaires like ours are prone to a "social desirability" bias, where respondents fall prey to overrating their knowledge or the importance of an assessment issue. On the other hand, discrepancies between ratings of importance and knowledge are less prone to this tendency. Furthermore a focus on the relative ranking of items helps to control for this potential bias.

The sample of Wyoming superintendents rated the importance of all 28 assessment knowledge items as high or very high. And, consistent with Impara et al. (1994), Wyoming superintendents rated the importance of assessment knowledge higher than they rated their own knowledge level. Though Wyoming superintendents rated the importance of assess-

ment knowledge higher than they rated their own knowledge level, there was important variation in the knowledge level across different topics.

The traditional elements of basic statistical analysis, concepts of reliability and validity, and interpretation of various types of test scores are no longer sufficient. Instead, superintendents now need to have advanced and complex knowledge of assessment. They must be able to lead the design and implementation of an assessment system that at once provides real-time data to the district and school leaders and also meets external accountability demands. They also need to know how to design and maintain assessment data management systems.

An important discrepancy between need for knowledge and rating of knowledge level was in using student assessment information to identify weaknesses in instruction. A major challenge to educators is that once data help them to recognize that a sub-group of students is underperforming, the important next step is to find out why. Superintendents need to learn how to take this next step. Methods of qualitative and action research must be part of a superintendents' knowledge related to assessment, accountability, and data-driven decision making.

When we think of assessment knowledge we tend to focus on the technical aspects of measurement and testing. But these superintendents gave us the strong message that while superintendents need to have this basic knowledge, they increasingly need more complex knowledge. They need more knowledge of what data to gather, and particularly how to manage these data in such a way that they serve the accountability and decision-making needs of the district. Computer hardware and software, and system development are an integral part of the assessment and accountability picture, and superintendents need more knowledge about these.

Recommendations

A brief survey of six schools in and near Wyoming, with doctoral programs in educational leadership, revealed only one with explicit coursework related to use of student assessment data and data-driven decision making. And in this one program, the course description does not reflect a heavy emphasis on helping candidates to develop the knowledge found important in our study. These programs must place more emphasis on the use of student assessment data in decision making.

Undoubtedly, university programs have the responsibility to match the appropriate knowledge to participants in educational leadership programs. The knowledge and skills of a superintendent in the area of student assessment appear to be significantly important to superintendents. The understanding of student data and the capability for leaders to use data to make decisions for the school and district must be at the heart of what preparation programs focus on.

Practicing superintendents should be provided with opportunities to learn more about student assessment, understanding data, and making decisions directed by the data. The Wyoming Department of Education has provided some training opportunities but more could be offered.

The relationship among leadership standards, certification requirements for the superintendency, and university superintendent preparation programs is at the heart of the conversation about the superintendency itself. Specific questions are: (a) What is the relationship among certification, standards, and university programs as related to superintendent preparation? (b) What should the certification requirements be, if any? (c) How should university superintendent programs change? (d) What do alternatives to university programs look like?

The professional literature and standards provide strong guidance for what preparation those training to become superintendents should receive in their graduate programs. High among these should be a solid foundation in principles of effective classroom assessment. Those topics which superintendents in our study rate as most important to know should also be an essential part of the curriculum and practicum experience for superintendent training programs. It may be that those rated less important to know should not be emphasized in coursework. And finally, those with the highest discrepancies should likely be the focus of professional development for practicing superintendents.

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