NATIONAL INSTITUTE FOR URBAN SCHOOL IMPROVEMENT

MODULE 2

Mining Data

Academy 2: Identifying School-Wide Patterns of Student Performance

Participant Handouts

Arizona State University, PO Box 872011, Farmer Bldg, Tempe, AZ 85287 - 2011
Phone 480.965.0391 • Fax 480.727.7012
www.urbanschools.org

Academy 2: Identifying School-Wide Patterns of Student Performance

This Academy helps participants develop their skills to analyze and use data over time to adjust and improve their strategies for instructional improvement.

Module Outcomes

As a result of the activities and information shared at this Leadership Academy, participants will:

- Identify a set of questions that will continually guide their leadership efforts for culturally responsive practices.
- Match the kinds of data that can be collected with those questions.
- Establish an ongoing process for measuring change effects.
- Understand the impact of progress in the building from a complex framework of change mechanisms.

Agenda

We constructed this Leadership Academy to occur within a 3-hour timeframe with 15 minutes or so for breaks and other time adjustments. The times listed below are approximate but reflect the time these activities and lecturettes have previously taken. Facilitators should be flexible, read their audience, and work to achieve the overall purpose and outcomes.

TIME	EVENT
15 min	Introductions and Greetings
35 min	Activity 1: Fishbone Activity
30 min	Lecturette 1: Richness and Complexity of Student Data
20 min	Activity 2: Understanding the Challenges: Assessing Your School's Student Achievement
10 min	Break
20 min	Lecturette 2: Using Student Data: Understanding the Challenges
15 min	Activity 3: Tracking Change
30 min	Leave-taking and Feedback

School Data

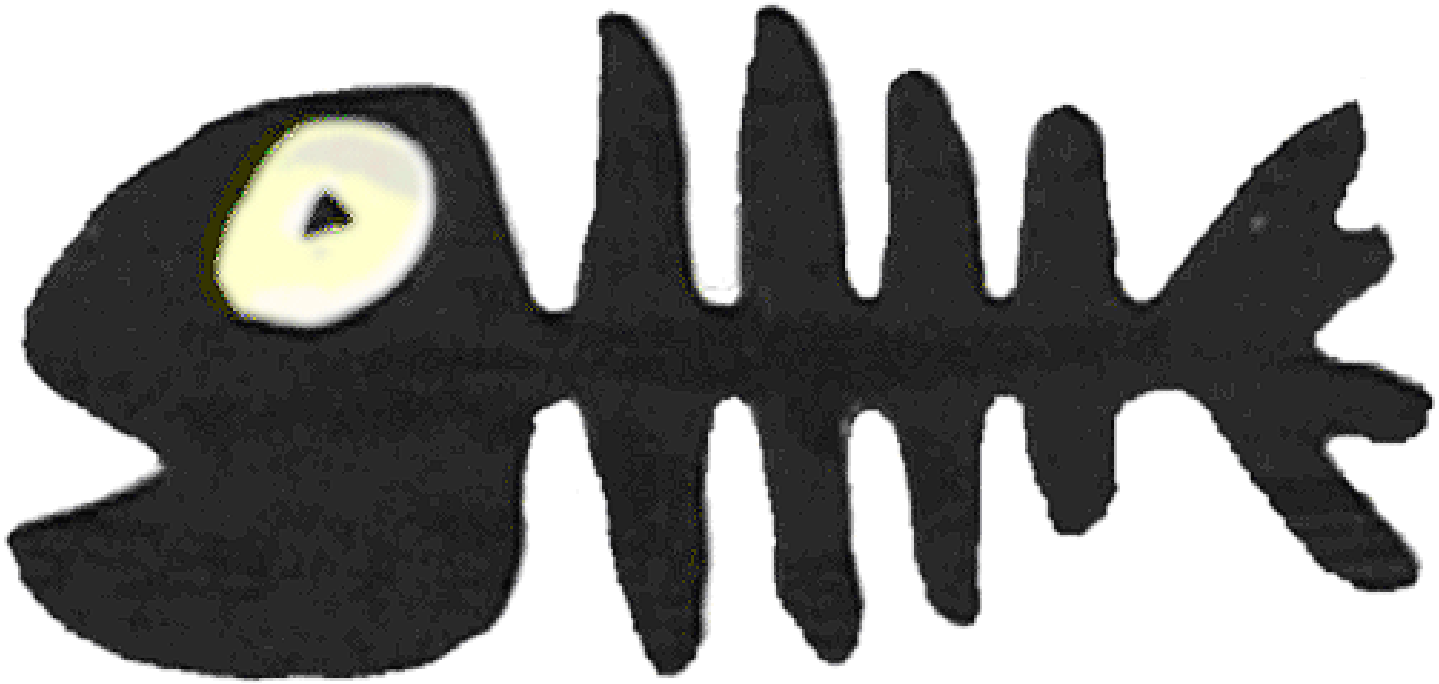
Provided are data from Abraham Lincoln High School. You will probably want to use data from districts other than the ones your participants are from so they won't get wrapped up in whether or not the data are correct. Here are the instructions to get alternative school profile data.

1. Go to the School Accountability Reports web page: http://www.state.co.us/schools
2. Select your school district in the "list search" menu.
3. Select a school.
4. Click on the "See Detailed Report" for the full school data summary.

Fishbone Activity

Explore data that may need further explanation. Use the parts of the fish to identify causes for the evidence.

1. Fish Head: The data to explore. (Eg: Dropout rates)
2. Fish Bones: Factors that may contribute to the data. (Eg: Changes in resources, reporting, etc.)
3. Fish Tail: Issues or factors that the data may not be saying or showing – what's missing? (Eg: Student attitude)



Lecturette 1:

Richness and Complexity of Student Assessment Data

Data use challenges

- Collecting
- Disaggregating
- Planning for improved instruction

Student achievement testing

Policymakers, educators, and the general public increasingly point to student achievement testing with large-scale assessments as a necessary component of, and catalyst for, education reform (McDonnell, 1994; Loveless, 2000; Simmons & Resnick, 1993; Smith & O'Day, 1991).

The tests

There is a growing list of student assessments used by schools that includes:

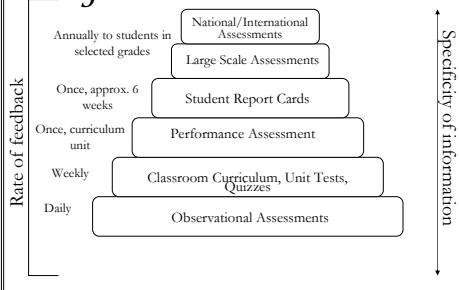
- district-administered norm-referenced tests
- student portfolios
- assessments related to government sponsored early literacy initiatives.

Assessment as the centerpiece of reform

- All 50 states have a state student assessment system
- 46 states use assessments that measure student achievement relative to specified content and performance standards
- State assessments are usually administered in the fourth, eighth, and tenth grade

Source: CCSSO Annual Survey of State Assessment Systems

The richness and complexity of student assessment data



The richness and complexity of student assessment data

Annually to students in selected grades — National/International Assessments

The richness and complexity of student assessment data

Annually to students in selected grades — National/International Assessments; Large Scale Assessments

The richness and complexity of student assessment data

Annually to students in selected grades — National/International Assessments; Large Scale Assessments

Once, approx. 6 weeks — Student Report Cards

The richness and complexity of student assessment data

Annually to students in selected grades — National/International Assessments; Large Scale Assessments

Once, approx. 6 weeks — Student Report Cards

Once, curriculum unit — Performance Assessment

The richness and complexity of student assessment data

Annually to students in selected grades — National/International Assessments; Large Scale Assessments

Once, approx. 6 weeks — Student Report Cards

Once, curriculum unit — Performance Assessment

Weekly — Classroom Curriculum, Unit Tests, Quizzes

The richness and complexity of student assessment data

Annually to students in selected grades — National/International Assessments; Large Scale Assessments

Once, approx. 6 weeks — Student Report Cards

Once, curriculum unit — Performance Assessment

Weekly — Classroom Curriculum, Unit Tests, Quizzes

Daily — Observational Assessments

Pulling Together Data

Data Collected	What's missing from the data?	Data still needed	What would collected data confirm or tell us?

Lecturette 2:

Using Student Assessment Data: Understanding the challenges

Professional development

There is little to no pre-service emphasis on the use of data in school improvement processes.

Analytical training

Without professional development training, teachers struggle with increasing levels of assessment-linked accountability.

(Cizek, 2000)

Training for educators

Although a foundation in data analysis and assessment is necessary, it is not sufficient for them to effectively synthesize assessment data at the school level.

Continuous improvement

Educators need a process for data use that supports ongoing, continuous improvement.

Lack of face validity

- Face validity refers to what a test appears to measure.
- For some principals and teachers, large-scale assessment data in particular are sometimes deemed invalid and untrustworthy because they are not perceived to accurately measure the achievement of their students.

Using data

The tension between the technical and face validity of assessments is important to consider when helping practitioners use their assessment data.

Quality assessments

High-quality school-based assessment systems let educators know what students have learned and what they have not, as well as what is being taught effectively and what needs to be taught better.

Assessment and action research

Once teachers begin to use assessment techniques that provide information about their classrooms, they can begin to ask questions about the effects of one kind of practice or another.

A smorgasbord of data sources

- Existing Archival Sources
- Conventional and Inventive Sources
- Document Review

Existing archival sources

- Attendance rates
- Retention rate/promotion rate
- Discipline referrals
- Dropout rate
- Suspension rates

Existing archival sources

- Parent communications
- Membership and attendance at PTO meetings.
- Grade distribution
- Standardized test data
- Number & percentage of students "labeled" as learning disabled, ESL, gifted, Chapter 1, etc.
- Number & percentage of that participate in school-sponsored organizations

Conventional and inventive sources

- Books read
- Library use
- Writing samples
- Teacher journals
- Student journals
- Student attitude
- Videotapes
- Students' descriptions of math problems.
- Math journals
- Number of hours
- Records

Conventional and inventive sources

- Interviews
- Minutes
- Measures of level of implementation
- Shared-governance journals
- Nature and amount of in-school assistance
- Nature of and amount of out-of-school assistance
- Number of hours of teachers & administrators participation

Document review

- Analyze local board of education policies.
- Analyze local curriculum guides.
- Analyze district and state standardized tests
- Survey accreditation reports

Overcoming the challenges

Schools that have committed

Policy Options for Local and District Leaders

Measuring Change

What is the data?	What is the data used for?	How often do we use the data?	Who looks at the data?	How do we know change is happening?

Self Assessment

This is a non-graded, anonymous self-assessment. You have 10 minutes to complete the following questions taken from the content of this academy. After that time the group will have the opportunity to share answers. Note that occasionally we collect these self-assessments to measure the effectiveness of the academy.

1. What issues surround the use of just one data source for evaluating student performance?

2. Why is it important to use the data you encounter in daily activities and explain how you rely on it in informal situations.

Academy Evaluation

Data Mining Academy 2: Identifying School-Wide Patterns of School Improvement

I am a

- ❍ General Ed Teacher
- ❍ Administrator
- ❍ Special Ed Teacher
- ❍ Parent
- ❍ Paraprofessional
- ❍ Other

_____

I am affiliated with a(n):

- ❍ Elementary School
- ❍ Middle School
- ❍ Secondary School

If I were on the next academy planning team, I would ...

Please let us know how useful you found the topics and activities:

Activity 1: Fishbone Activity

Poor				Great
1	2	3	4	5

Activity 2: Understanding the Challenges: Assessing Your School's Student Achievement

Poor				Great
1	2	3	4	5

Activity 3: Using Data to Support School Improvement

Poor				Great
1	2	3	4	5

Self Evaluation

Poor				Great
1	2	3	4	5

Three things I learned that made me go... AH HA!

1. _____
2. _____
3. _____

As a result of my participation in this academy, I am going to ...

NATIONAL INSTITUTE FOR URBAN SCHOOL IMPROVEMENT

Resources

Armstrong, J. & Anthes, K. (2001). How data can help. *The American School Board Journal, 188*(11), 38-41.

A study explored how districts can use data more effectively. Data were obtained from six schools in five different states that had reputations as particularly effective users of data. It emerged that districts that make good use of data share several characteristics. These common factors are strong leadership; a supportive district wide culture for using data for continuous improvement; a strong service orientation toward principals and teachers; partnerships with universities, businesses, and nonprofit organizations; a mechanism for supporting and training personnel to use data; close accounting of every student's performance on academic standards; a focused flexibility in how time is used; and a well-defined, data-driven school improvement process.

Brimijoin, K., Marquissee, E., & Tomlinson, C. A. (2003). Using data to differentiate instruction. *Educational Leadership, 60*(5), 70-73.

Part of a special issue on using data to improve student achievement. An overview of how one teacher uses assessment data to differentiate instruction is presented. The teacher uses multiple methods of data collection and believes her role as data collector is to determine students' prior understanding and achievement, track their responses to moderate challenges, and measure their outcomes against expected performance goals. She uses a wide array of pre-assessments when teaching new content and uses assessment to modify instruction so that each student is appropriately challenged. To prepare for state standards testing, she asks students to select topics that need more work and sets up centers to serve students' needs. In addition, this teacher uses assessment to target learner needs.

Brown, K. & Capp, Robert (2003). Better data for better learning. Leadership, 33(2), 18-19.

A standards-based assessment program at Rocklin Unified School District in Rocklin, California, uses technology to link assessments directly to standards, producing timely reports that teachers and administrators can use to monitor student progress and hone the curriculum. The four steps involved in this program include distributing assessments to students, scanning their answers into the classroom computer, using Web technology to collate the data, and using the data to quickly identify potential areas of concern.

Marzano, R. J. (2003). Using data: Two wrongs and a right. *Educational Leadership, 60*(5), 56-60.

Schools and districts often make two mistakes in their efforts to be data-driven. The first mistake occurs because schools use measures of student learning that are not sensitive to the actual learning occurring in classrooms. The second mistake comes about when a school or district has no system or plan for interpreting and using the data. Education research has revealed 11 student, teacher, and school factors that affect student learning. These are a guaranteed and viable curriculum,

challenging goals and effective feedback, parent and community involvement, a safe and orderly environment, staff collegiality and professionalism, teachers' instructional strategies, classroom management, classroom curriculum design, home atmosphere, learned intelligence and background knowledge, and student motivation. A survey instrument that can be used to identify specific elements for each of the 11 factors that directly affect student achievement is discussed.

Parsons, B. A. (2003). A tale of two schools' data. *Educational Leadership, 60*(5), 66-68.
The different approaches to data collection and analysis that are taken at two school districts are discussed. In the first district, an examination of previous scores is conducted, a goal is set, and individual teachers are left to figure out how to reach this objective. In the second district, a diagnosis is made, a goal is set, a planning system based on program planning and action as well as evaluative inquiry is created, and an Action Team and an Evaluative Inquiry Team is developed for each subject area. The first district reports progress on overall math achievement on a yearly basis, but teachers do not know how to link this information to the variables they can control. However, the second district reports on research-based changes to improve student learning, how levels of implementation of the new methods are linked to progress in student learning, and how teachers are sharpening their instruction.

Popham, J. W. (2003). The seductive allure of data: Using data to improve student achievement. *Educational Leadership, 60*(5), 48-51.
This article examines how teachers can use classroom data to improve teaching and learning, focusing on how to determine if data is reliable and useful. Topics include designing instructionally useful educational tests and analyzing data from standardized achievement tests.

Rudner, L. M. & Boston, C. (2003). Data warehousing: Beyond disaggregation. *Educational Leadership, 60*(5), 62-65.
Schools should consider data warehousing to ensure their data collection and reports comply with the new No Child Left Behind legislation and to provide a more precise tool for improving education. Data warehousing allows educators to use collected data for traditional purposes, to transform mountains of data into useful information, and to help policymakers identify and plan responses to key trends. When well-organized and easily accessible, a data warehouse can provide a wide range of important analyses that use cross-sectional and longitudinal data. Suggestions for building a functional education data warehouse are provided, and the benefits of data warehousing are discussed.

Thomas, R. S. (2003). Conversations that unlock knowledge in our schools. *Principal Leadership, 3*(8), 40-44.
Advice for school principals on how to develop the ability of faculty to discuss significant student learning issues is provided. This advice relates to the need to use several key categories of questions in faculty conversations if a school is to move from data to information to knowledge. These

categories relate to understanding data, analyzing desegregated data, transforming data into information, benchmarking school performance against other schools, and using information to identify root causes of current achievement levels.

Thornburn, M. & Collins, D. (2003). Integrated curriculum models and their effects on teachers' pedagogy practices. *European Physical Education Reviews, 9*(2), 185-209.

There is increasing interest in how philosophy or overarching aims are articulated through the various planning stages to eventual teaching methodology Accordingly, this paper analyses the interrelationship between teaching, learning and assessment through tracking the decision-making chain from teachers' intentions to the assessment of student outcomes. The context employs an integrated curriculum model, which attempts to link improving performance within activities with the development of an underpinning knowledge about performance-related concepts. The paper reports findings from 40 semi-structured and small group interviews with PE teachers and students in a purposeful sample of secondary schools in Scotland, all following a centrally defined integrated curriculum. Results highlight profound disparities in the pedagogy practices teachers adopt in attempting to translate a dictated 'practical experiential' rationale into performance-led practice. Consequently, this paper provides discussion points for the further review of policy and related methodologies.