Data-Driven Decision Making Requires More than Just Achievement Data: Measuring and Analyzing the Factors that Influence Achievement

Martha Abele Mac Iver,
Johns Hopkins University

Elizabeth Nash Farley-Ripple,
University of Delaware

The Problem

"Water, water everywhere,

Nor any drop to drink"

"Data, data everywhere

Too much to let us think."

W. James Popham

Educational Leadership, Jan 2009

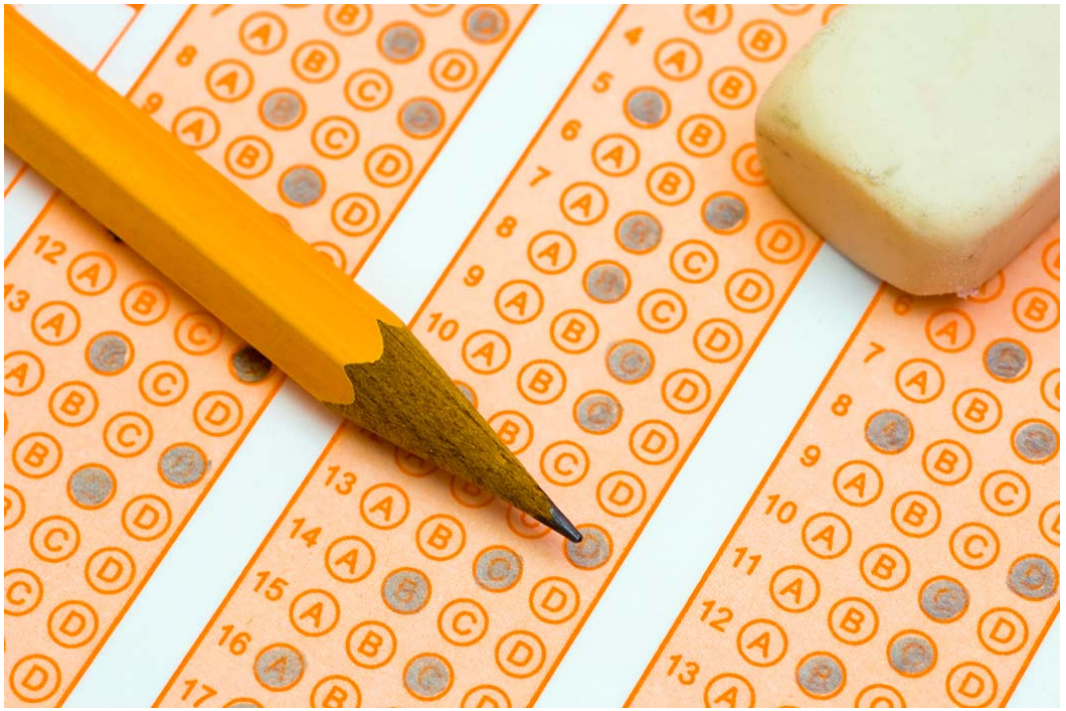
(And Coleridge, *Rhyme of the Ancient Mariner*)

Data-Based Decision-Making (DDDM); or Drowning in Data?

Do you feel like you're drowning in data?

How can we think about the need for even more data?

The problem of focusing only on the data we have in hand



In the midst of all this achievement data, how do we know what to do to improve achievement outcomes for students?

Beginning with the End in Mind

Goal is for participants to understand:

- The importance of collecting and analyzing data on factors behind student achievement (e.g., teacher practice, instructional quality and intervention implementation)
- Specific strategies for collecting and analyzing such data
- How to use results in a feedback loop for decision-making regarding instructional practice, equipping teachers, and implementing effective interventions for students

Rounding Up the Usual Suspects: Most Commonly Asked Questions in DDDM

Which groups of students (by demographic and status groups) are succeeding or not succeeding on accountability measures (primarily achievement tests)?

Which students should we focus attention on to improve our scores (the "bubble" students who have the potential to achieve at a satisfactory level with additional instruction)?

Which content or skill areas need particular attention?

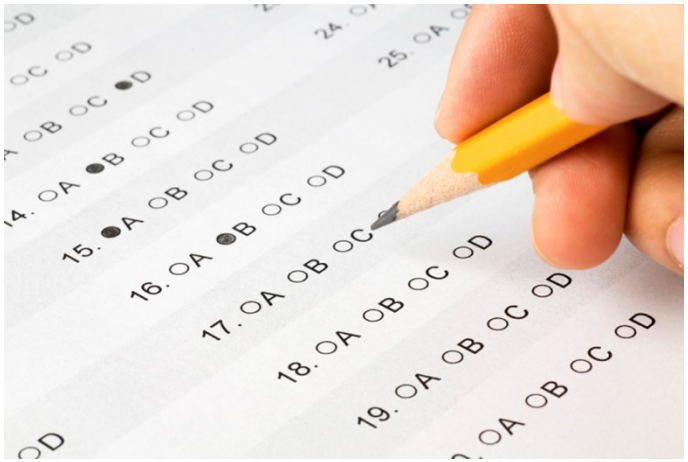
Questions that the Achievement Data Alone Cannot Answer

- Why are particular groups of students not achieving at a higher level?
- What problems in the classroom could be inhibiting learning?
- What types of instruction might be needed to increase student learning?
- What other interventions or changes in teacher practice might be needed?

Conclusion from Rand Study of DDDM

"Most schools and districts in our studies are focusing significant attention on outcome data, particularly state test scores. Educators participating in the studies, with a few exceptions, do not appear to be using input, process, or satisfaction data as frequently or as systematically as they use outcome data."

March, Pane & Hamilton, 2006



Case Study

A new high school principal's questions:

- Why isn't student achievement higher at this historically selective urban high school?
  - Why are SAT scores well below the national average?
  - Why are many students with good attendance still not achieving higher?
  - Why is the rate of post-secondary enrollment lower than one might expect from a selective school?

Using Serendipitous Data

- An ongoing external research study, originally focused more on other questions, included rich, longitudinal data based on classroom observations during student shadowing
- Observations had occurred in total of 123 classrooms in all subject areas over five years

Inside the Classroom Box

- While a majority of classrooms were coded as sufficiently challenging on curriculum content,
  - A significant minority were less than sufficiently challenging in curriculum content
  - More than half had lower than a challenging level of instructional activity, with one in five classrooms having a low level of instructional activity or no instruction occurring at all.
  - One in ten classrooms observed was taught by a substitute, with virtually no instruction occurring

- More than a quarter of the classrooms observed had significant management problems, with 6% coded as "chaos."
- Only a third of classrooms had a high level of student engagement
- Of the core academic subjects, Math had the lowest average level of student engagement and classroom management and the most non-academic time spent in the classroom.

While the principal couldn't know for sure that there was a causal connection with student achievement, there was certainly evidence of several issues that needed to be addressed (and probably were affecting achievement):

- Improving classroom management
- Increasing teachers' capacity to deliver engaging and challenging instruction
- Decreasing the amount of instructional down-time noted in observations
- Decreasing the percentage of student time spent with substitute teachers and no instruction

Planning for Collection of Additional (Non-Achievement) Data

- Most school leaders don't have the luxury of an externally funded research study that can provide useful data at the right time (though participation in such research studies can be a very useful process for schools)
- How can school leaders obtain the kind of data that will be useful in helping them to take action to improve student outcomes?

Examples of Data Collection Strategies

- "Walk-Through" Observation Strategies
- Systematic, In-depth Observation Strategies
- School climate surveys
- Student surveys regarding experiences in classroom and school in general
- Surveys of teachers regarding professional development needs and opinions of current professional development delivery

"Superintendent in the Classroom"

- Superintendent of Miamisburg (Ohio) Public Schools shared his observation strategy in *Phi Delta Kappan* (March 2006)
- "Walk-through observations" inspired by the "management by walking around" principle (Peters and Waterman)
- Not for the purpose of individual teacher evaluation but rather for general data gathering for school and district leader use

Schomburg's 3x 5 Observation Rubric

ARRANGEMENT OF CLASSROOM	TRADITIONAL ROWS/CLUSTERS
LOCATION OF TEACHER	DESK/FRONT/WANDERING
USE OF TECHNOLOGY	COMPUTERS/VIDEOS/ AUDIOTAPES
TYPE OF INSTRUCTION	DIRECT INSTRUCTION/INTERACTIVE/ SEATWORK/ASSESSMENT
HOW ARE STUDENTS ENGAGED?	WITH THE TEACHER/ WITH EACH OTHER/ WITH JUST THE WORK

McRel Power Walk-Through

- Mid-Continent Research for Education and Learning (McRel) offers a more technological version of this strategy
- Use of handheld computer for data entry during walkthrough observations (eliminates need for later data entry)
- Observation protocol includes coding of practices emphasized in McRel's "Classroom Practices that Work"
- More details available on http://www.mcrel.org/powerwalkthrough#enroll

McRel Power Walk-Through

- the extent to which teachers are using “Classroom Instruction that Works” strategies,
- the context of instruction (e.g., whole group, small group, individual),
- the sophistication of student work,
- whether students can identify their learning goals, and
- teachers’ and students' use of technology

CCDRE Root Cause Analysis

- The Center for Data-Driven Reform in Education (CDDRE) helps districts analyze root causes for low achievement
- Focus on issues in:
  - Organizational culture
  - Organizational structure
  - Instruction and preparation

CDDRE Walk-Through Data Observation Form

- Student engagement ratio
  - How many students are active? Passive?
- Instructional strategies
  - What is the teacher doing?
- Level of Rigor
  - Evidence of focus on knowledge, comprehension, application, analysis, synthesis, evalation
- Climate

Observation form available at
http://www.cddre.org/achievement/root_analysis.html

More In-Depth Observation Tools

- Some policy decisions may need more in-depth information (data)
- Tools for more in-depth understanding of student classroom experience and relationship between instruction and student achievement:
  - Require longer time in classroom (at least one hour or length of MS/HS class; at least two hours at elementary level)
  - Provide more in-depth measures of teacher practices and student engagement

Classroom Assessment Scoring System (CLASS)

- Observational instrument developed by Robert Pianta and others at the University of Virginia
- Used to assess classroom quality in grades K-3
- Describes multiple dimensions of teaching linked to student achievement and social development
- Validated in over 2,000 classrooms
- Provides a tool to help teachers become more effective

www.classobservation.com

CLASS Dimensions of Classroom Quality

- Emotional Support
  - Positive/negative climate
  - Teacher sensitivity and regard for student perspectives
- Classroom organization
  - Behavior management and productivity
  - Instructional learning formats
- Instructional Support
  - Concept development
  - Quality of feedback
  - Language modeling

"First Things First" Classroom Observation Tools

- Developed by MDRC (with help of Professor Phyllis Blumenfeld) for study of middle and high school classrooms
- Part of a larger study of the First Things First whole school reform model
- Useful for other in-depth studies of middle and high school instruction and students' classroom experiences

www.mdrc.org/publications/390/full.pdf

Components of FTF Observation Protocol

- Physical Environment
- Running Record
- Point-in-time snapshot of instructional activity
- Post-observation teacher interview
- Observer comments
- Observer summary (closed-ended coding summarizing observation)

Measuring Instructional Quality (FTF)

Components Observed

- Teacher Activity Level
- Opportunities for active student learning
- Teaching for Understanding
  - Modeling strategies
  - Modeling reasoning and metacognitive practice
- Pressing for Understanding
  - Emphasis on why and how questions
  - Emphasis on students verbally demonstrating understanding

Measuring School Climate

- Importance of understanding perceptions of school experience through eyes of
  - Students
  - Teachers
  - Parents
- Issues of
  - Safety and social relationships
  - Conducive environment for working/learning
  - Experiences in the classroom

Example survey findings in Baltimore

http://www.baltimorecityschools.org/Student_Performance/Institutional_Research/index.asp

Measuring Teacher Needs

- Unfortunately, much of professional development time for teachers is wasted, when it could be used to much better advantage
- Although teachers don't always realize all they may need (in training or coaching to make changes in practice), teacher surveys are useful for helping to understand beliefs and attitudes as well as perceived needs for professional development

Example survey at:
Http://www.apa.org/ed/cpse/teachersneeds_final.pdf

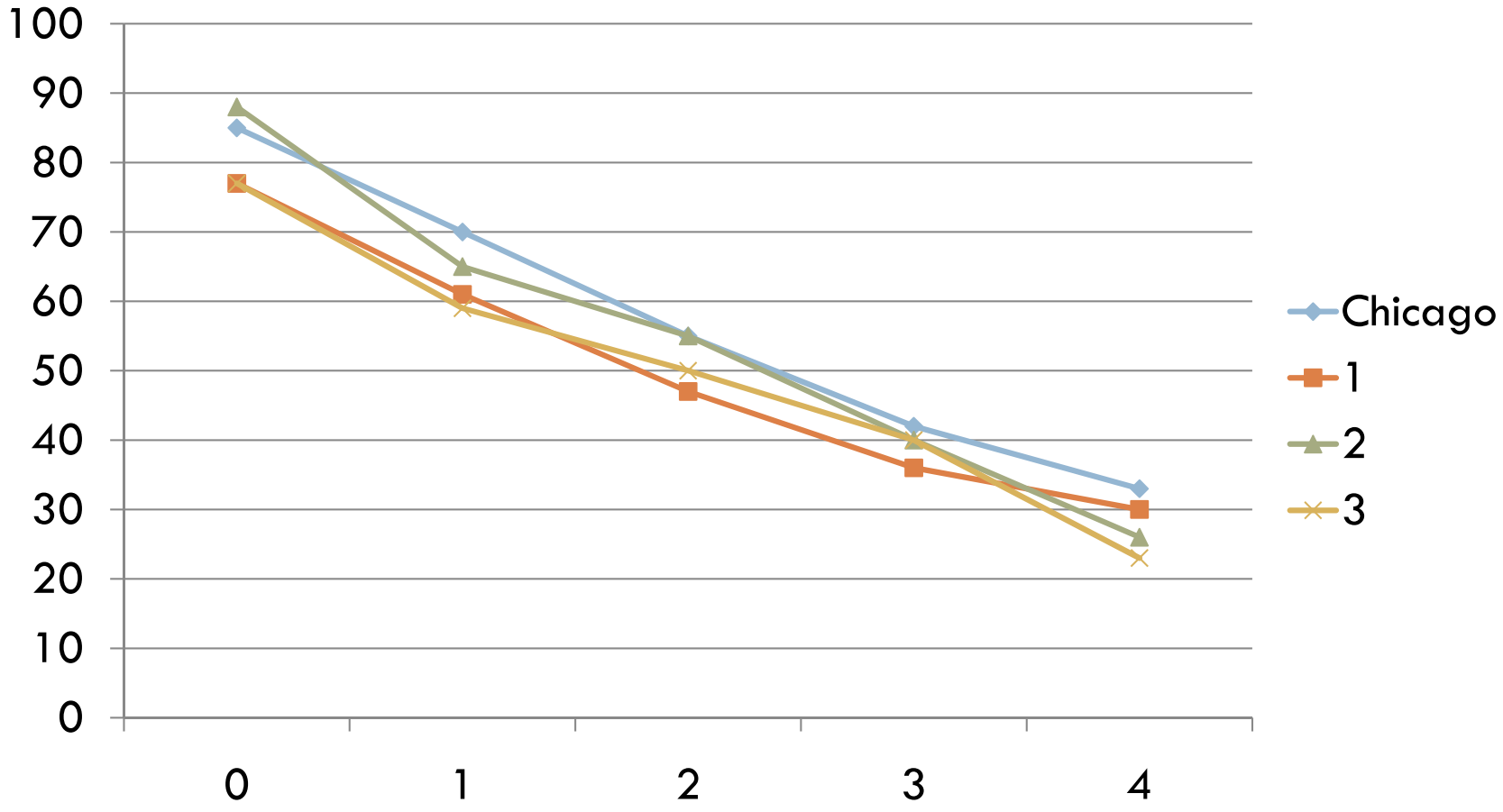
Applying DDDM to the Dropout Problem

- Student achievement outcomes are more than just test scores
- NCLB finally adding cohort graduation rate as an accountability measure
- How do we apply DDDM to be able to reduce the number of dropouts and increase graduation rates (which are not always exact inverses of each other)?

Building on Prior Research

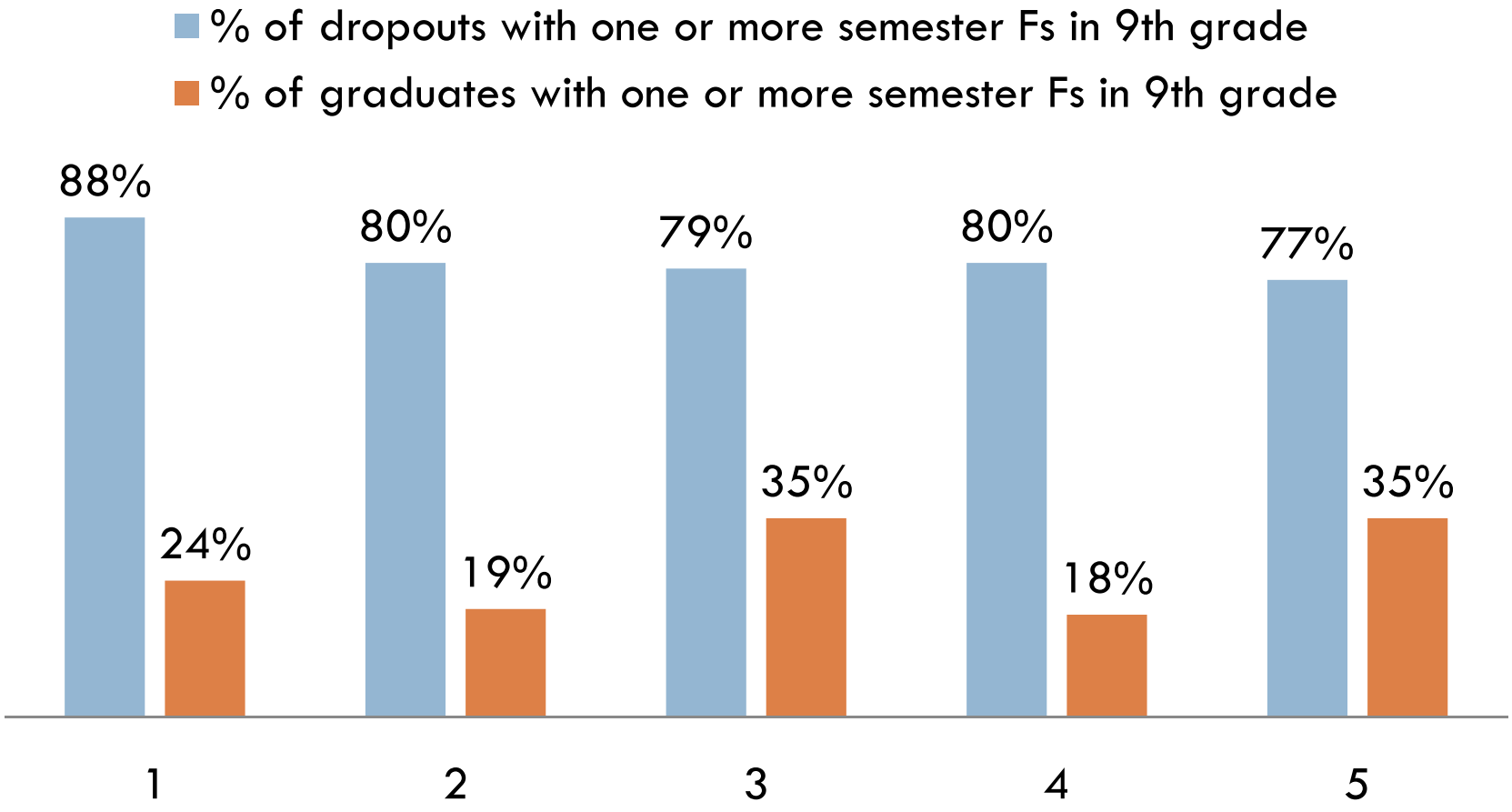
- Most dropouts are giving early warning signs years in advance
- Research indicates that 9th grade course failure (often, but not always, related to poor attendance) is one of the best predictors of a dropout outcome

Impact of Course Failure on Probability of Graduation



Percentage of Students Graduating from District within Four Years, by Number of 9th Grade Semester Failures

Semester Course Failure: Dropouts vs. Graduates



What kind of data would you need to be able to address the dropout problem in your district?

GROUP BRAINSTORMING SESSION

Examining Existing Data on Course Failure

- Do district and school leaders have timely access to summaries of interim report and report card data on student failure?
- Is it possible to analyze the data easily to ascertain whether it is concentrated:
  - In certain schools?
  - In certain subjects (e.g., math)?
  - Among certain teachers?
  - In certain periods (e.g., first period, suggesting an impact of late arrive to school?)

More In-depth Data Collection to Understand the Problem of Failure

- Surveys/interviews with administrators/counselors
  - Extent of collaborative focus on the problem of failure and how to prevent it
  - What kinds of interventions provided
  - What kinds of recovery options provided
- Surveys/interviews with teachers and students
  - Their explanations of failure
    - Gradebook analysis (e.g., role of zeros averaged in?)
    - Role of Attendance
  - What kinds of interventions provided
  - What kinds of recovery options provided

Framing of Questions to Shape Policy Planning

- What changes in teacher practice could reduce extent of failure?
- What obstacles (individualistic practice, entrenched beliefs, unwillingness to change) might need to be addressed?
- What interventions might need to be set in place to reduce extent of course failure?
- What steps would need to be taken to put these interventions into place?

Developing an Intervention Action Plan

Example of an Intervention Plan to Reduce Course Failures

- Teacher initiates recovery plan with student at first failing assessment in the class
- Extra help implemented/intervention to increase attendance
- Opportunity to replace “Fs” on assessments by retaking them

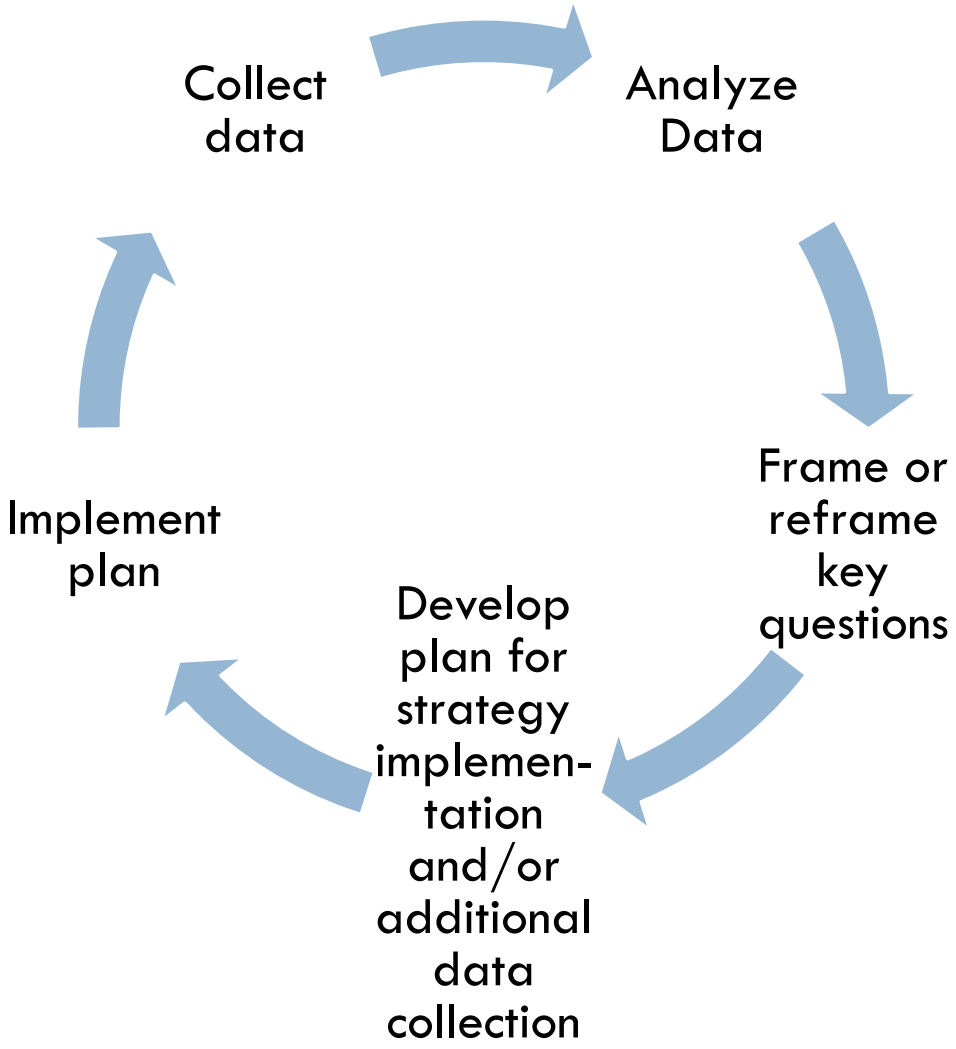
Evaluating the Intervention's Impact

- Collection of data after intervention piloted
  - Impact on failure rate (compared to similar classrooms where intervention not implemented)
  - Teacher attitudes
  - Student attitudes
- Evaluation of intervention
  - Revisions needed?
  - Different interventions needed?

Framing Questions for Policymaking

- Does positive impact of intervention suggest expansion of policy?
- If impact not significant, what other interventions might need to occur to help students pass courses and earn H.S. credits?
  - Interventions in earlier grades to assure readiness for high school work?
  - Interventions to address attendance problems in earlier grades before they become impossible to change?
  - Creative credit recovery options (alternative instructional delivery?)

Cycle of Inquiry



DDDM in a Learning Community

This cycle of inquiry is a fundamental practice of a well-functioning "learning community," which is what every school and school district should be --

"…organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together."

Peter Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (1990)

Summing It All Up

Why I need more data (so I won't drown in all the data I already have)

How I can collect and use data on what influences student achievement

How I can use the Cycle of Inquiry within my learning community in making decisions to improve the outcomes for all students

Next Steps

- To what pressing issue in my district/school can I apply this knowledge?
- How can I partner with others within a learning community to use this cycle of inquiry as a framework for better decisionmaking?
- How can we share what we're learning with others?
- How are the children benefitting from all this?

FOR MORE INFORMATION

PLEASE CONTACT:

Martha Abele Mac Iver

Center for Social Organization of Schools
Johns Hopkins University

www.every1graduates.org
mmaciver@csos.jhu.edu

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