

Data teams for school improvement¹

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MEETING 1: PROBLEM DEFINITION

Brainstorming “problems”

Data use should not start with data. You will run the risk of getting lost. It is important to start with a certain problem, question or goal. What problems are you or your team experiencing and do you want to address

Identifying the problem

- Each team member identifies problems the data team can work on
- Discussion on the problems and characteristics of the problems
- Chose on which problem the data team wants to focus (if disagreement exists, the team can vote about is)

Identified problems	Characteristics of the problem (why is it a problem)

¹ This procedure is partly based on: Earl, L. M., & Katz, S. (2006). *Leading schools in a data-rich world. Harnessing data for school improvement*. Thousand Oaks: Corwin Press.

MEETING 2: HYPOTHESES AND DATA

Hypotheses and data

What causes the problem? What hypotheses do you have about the problem? Based on your experiences, observations and knowledge you are bound to have certain ideas about what causes these problems. Try to fill out the following Table with your data team. Formulate hypotheses with regard to what causes the problem and think about what data the team needs to collect to either be able to accept or reject the hypotheses. Two examples regarding to two different problems (e.g. low mathematic achievement and grade repetition) are provided. Examples of indicators and possible data can be found on the next page as well.

Hypotheses (causes of the problem)	Indicator	Data source
Students fail their math assessment, because they lack the skills to compute percentages	Student achievement	Assessment results
Our school has to many student that have to repeat a grade because our students are not motivated to learn	Student characteristics	Throughput data and student motivational survey

If this Table is filled out, decide who is responsible for collecting what data. Make sure that all the data needed to check the hypotheses are brought to the next meeting.

Indicators and possible data sources

Indicator	Possible questions	Possible data
Student characteristics	What are the characteristics of the student population? What changes can we expect?	Data on truancy, input, throughput, output, ethnicity, sees
Student achievement	How well do our students achieve? Do students learn as much as we may expect based on their backgrounds? Do students score better on certain subjects than on other subjects?	Assessments, (oral) exams, portfolio's, grades
Instruction and types of assessment	Which instructional strategies are employed? Which types of assessments are employed	Classroom observation, assessments analyses
Parent characteristics	What is the opinion of parents of the school? To which extent are parents involved in the school?	Parent questionnaires, parent focus groups
School culture	How do students Judge the atmosphere in the school, safety, discipline etc? How do teachers interact with students?	Teacher questionnaire, student questionnaires, student focus groups
Staff characteristics	What is the average education level of school staff? What is the average age of school staff?	Age, qualifications, genders, leave of absence
The curriculum	Which subjects are offered? How much time is scheduled for each subject?	Subject descriptions, rosters, policy plans
The building and materials	How often are the different buildings used? What types of material are available in the school?	Classrooms, computers, books, software, manuals, instruments
Professional development	Which professional development opportunities are offered? In which trainings and courses did teachers previously participate?	Courses and workshop and participation

MEETING 3: QUALITY OF THE DATA

Before analyzing and interpreting the collected data it is important to review the quality of the data. What are the limitations of the data and how reliable are the data? Reliability can be defined as the extent to which a measurement is dependent on coincidence. There are factors which can pose a threat to reliability. The instrument used to collect the data can not be reliable. For example, the answer to a question concerning once gender is less dependent on coincidence than a question about a person's satisfaction with a certain method.

Data can also be reliable but not valid. Validity can be defined as the extent to which one measures what one wants to measure. Imagine that somebody uses the number of years a teacher is using a certain method as a criterion for satisfaction with this method. This is probably not very valid. It is possible that the teacher uses this method year after year, simple because there is no money to purchase a new method (e.g. and not because he or she is so satisfied with the method). Try to answer the following questions for all the data collected:

- How much Faith do you have in the data?
- Is it possible to compare these data with something (for example, data of previous years, another school, other classrooms)
- Do the data include enough information?
- What are the limitations of the data?

MEETING 4: ANALYSES AND INTERPRETATION

Data that were found to be reliable and valid need to be analysed and interpreted. Data needs to be related to each other. Meaning needs to be found in the data, and we need to look at the data from different perspectives. Only if we are completely satisfied that we have enough data and the right types of data we will start basing decisions on data.

Some general tips and questions:

- Take your time and distance, don't jump to conclusions
- Analyze and interpret with colleagues
- Focus on improvement and not on "shaming and blaming"
- What is the first thing that comes to mind if you look at the data?
- What do the data mean and what patterns do you recognize?
- Do the data answer your questions?
- Are the data detailed enough?
- What is confusing or not clear?
- Do you need additional data, and if yes which data?

Next, all the data collected will be divided over small groups of two or three persons. These groups study the data and try to answer the following questions:

1. What is your first interpretation? Which patterns do you recognize, which are of importance and why?
2. What is confusing and not clear?
3. Which additional information do you need in interpreting the data?
4. Could your conclusions change based on new data?
5. What are your most important conclusions? Present these to the entire group.

MEETING 5: ADDITIONAL DATA

It is becoming increasingly clear what possible causes of our problem are. However, you might still not have figured it out yet. You may need to come up with new hypotheses and/or collect additional data. It might also be necessary to conduct classroom observations. For example, we are working on the problem of low mathematic achievement in the lower grades of secondary education. Based on data, we discovered that students experience the most problems in percentages assignments. We also discovered that boys are doing worse than girls. If we conduct classroom observations we will be able to find out:

- How much time a teacher spends on percentages?
- Which instructional strategies the teacher uses when it comes to percentages?
- How the teacher differentiates between boys and girls?
- Etc.

If it is necessary to conduct classroom observations, discuss beforehand on which topics to pay attention, for example by using an observation instrument as the one presented below.

Topics	Observation notes
How much time does the teacher spend on percentages	
Which instructional strategies the teacher uses when it comes to percentages?	

MEETING 6: CONCLUSIONS

Based on all the different data collected, discuss:

- Which aspects of the problem have become clear and need immediate action
- Which aspects of the problem have become clear and need action in the future
- Which aspects are still not clear (go back to step 2 for these aspects)

MEETING 7: TIME FOR ACTION

Based on the previous steps it is time to come up with measures to address the problem and improve education. Describe the necessary actions and related goals. Make sure that you formulate SMART goals (specific, measureable, acceptable, and realistic, on time). Divide responsibilities and discuss which facilities are needed:

- Goals of the actions (SMART)
- Team leader
- Team members
- Which measures need to be taken and why?
- Who is responsible for which measures?
- What are the deadlines and milestones?
- Which facilities are available?
- How are we going to monitor progress?
- Which data do we need for this?
- When are we satisfied?

MEETING 8: EVALUATION

Determine if your measures are effective. Is the problem solved? Did you reach your goals? To evaluate your measures you need to collect new data. If the data show that you solved the problem you can start at step 1 again with a new problem. If your measures were not successful you need to go back to step 2. By continuously using this data team procedure you can address quality care and school improvement in a cyclic data-driven manner.