



Using Data for Improving  
School and Student Performance



Education and Culture DG

Lifelong Learning Programme

DATAUSE: Comenius Multilateral Project 510477-2010-LLP-PL

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**Development of the Data Use Professional Development Course  
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## *Abstract*

Together with four other partner organizations in the United Kingdom, the Netherlands, Germany, and Lithuania, the authors (from Public Consulting Group, Inc.) are currently administering a Data Use professional development course which was developed as part of a two-year multilateral project: *DATAUSE: Using Data for Improving School and Student Performance* ([www.datauseproject.eu](http://www.datauseproject.eu)). The project aims at improving educational outcomes by establishing and training school-based teams (professional learning communities, or PLCs) to use data to inform decisions about school development, accountability, and instructional improvement. This paper presents the theoretical basis for the Data Use Course (i.e. theory of action) as well as the general course structure and an inquiry framework. It then summarizes the experiences of one gymnasium located in Poland as they implemented the course in their school. The paper concludes with final observations and reflections.





Data have become increasingly important in an age of increased accountability and significant school autonomy. As schools are held more accountable for student outcomes and the quality of the education they provide, data-driven decision making is becoming increasingly important (Boudett, City, and Murnane, 2005; Boudett and Steele, 2007; Ronka, Slaughter, Lachat, and Meltzer 2008). Data can be used to formulate appropriate and effective education policy and to measure the effectiveness of programs and instructional interventions. Data can also be used to measure individual student progress, guide the development of curriculum, determine appropriate allocation of resources, and to report progress to the community (Schildkamp, 2010). But despite the leverage that can be gained by using data effectively, many schools still struggle with data-driven decision-making (Bernhardt 2006; Schildkamp, 2010, Supovitz and Klein, 2003; Wayman, 2006).

Despite the importance of using data, very little training exists throughout Europe to help school leaders and their staff use data effectively. It was within this context that Public Consulting Group, Inc. (PCG) formed a consortium of expert institutions in Europe and designed a two-year multilateral grant project: DATAUSE: Using Data for Improving School and Student Performance ([www.datauseproject.eu](http://www.datauseproject.eu)) that aims at improving educational outcomes by establishing and training school-based teams (professional learning communities, or PLCs) to use data to inform decisions about school development, accountability, and instructional improvement.

The DATAUSE project, co-funded by the EU Comenius Program from 1 November 2010 to 31 October 2012, involves partners from five countries: Poland (PCG), Germany (Institute for Information Management Bremen GmbH), the Netherlands (University of Twente), the United Kingdom (Specialist Schools Academies Trust), and Lithuania (Modern Didactics Center). The experience and expertise brought to the DATAUSE project by the partners has contributed significantly to realizing the projects goals, particularly the development of the Data Use Professional Development Course which has been designed to address the documented lack of capacity of school leaders and staff to effectively use data to improve student outcomes.

The project milestones include:

1. Conducting research and developing a European data use theory of action
2. Developing data use governance structures in schools
3. Diagnosing schools' ability to use data effectively
4. Providing data use professional development
5. Disseminating best practices across all stakeholder levels

### EU Data Use Model

In the initial phase of the project the partners conducted research to understand current data use practices in partner countries, including: Poland, the United Kingdom, Germany, Lithuania, and the Netherlands. The research took the form of an explorative study and was conducted using a qualitative methodology. It included 10 case studies of schools (2 schools in each country) where the partners collected information on the context of using data such as: types of data available, types of internal and external evaluations, pressures and supports for data use in schools, and accountability mechanisms. The research also included interviews with school leaders and teachers to provide more in-depth insight. Based on the results of the research, a review of relevant literature, and the partners’ international experience, the project team developed a Data Use Theory of Action. This construct provided the framework for the data use survey and the foundation for the data use professional development course.

The Data Use Theory of Action is shown in the graphic below:

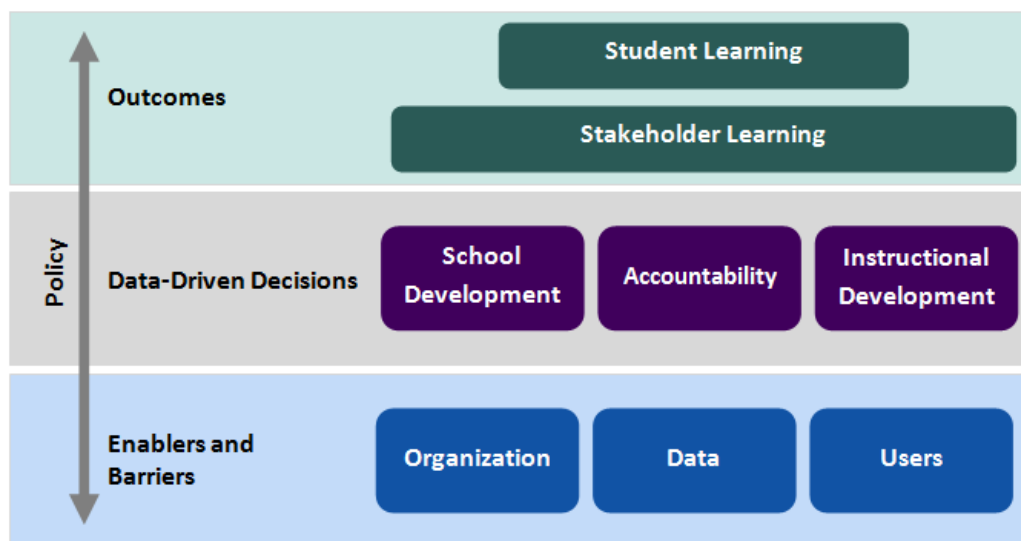


Figure 1: The Data Use Theory of Action

The theory of action begins by recognizing that there are factors within each school that either enable or hinder data use:

The **organization** (e.g. availability of data use expertise, teacher collaboration time assigned for data use, governance structures);

The **data** (e.g. availability, accessibility, quality); and

The **users** (e.g. knowledge, skills, attitudes).



Built upon the enablers and barriers for data use are the kinds of decisions that can be informed by data. That is, if data use barriers are minimized and data use enablers are maximized, data can be more effectively used to guide decisions in the following domains:

For **school development** (e.g. policy development, teacher professional development, improving the school climate);

For **accountability** purposes (e.g. meeting legal demands, communication with stakeholders); and

For **instructional development** (e.g. monitoring progress, adjusting instruction, modifying the curriculum).

If data are used for these different purposes, the theory of action asserts that a key outcome will be **stakeholder learning** (e.g. teachers, school leaders, parents). For example, through analyzing assessment data, a teacher might learn that a majority of her students are struggling with a particular mathematics concept. She might then seek to learn how she could address that need through observing other teachers or researching best practices. These learnings would then lead to changes in her instructional practice, which might include spending more time on the topic, teaching it differently, or changing its sequence in the curriculum. According to the theory of action, Stakeholder learning (and changes in practice and behavior driven by that learning) will ultimately lead to improved **student learning**, because educational improvements would be based on *students' specific needs* and *grounded in best practices* drawn from a variety of sources.

Finally, the Data Use Theory of Action recognizes **policy** as a major influence on all parts of the model: enablers and barriers to data use, the types of decisions that are made using data, and ultimately the extent to which using data results in meaningful outcomes.



### The Data-Driven Inquiry Model

Through the research, the team found that in addition to the elements in the Theory of Action, another key factor to using data effectively is the disciplined use of an inquiry model. The team developed the following 5-phase inquiry model:

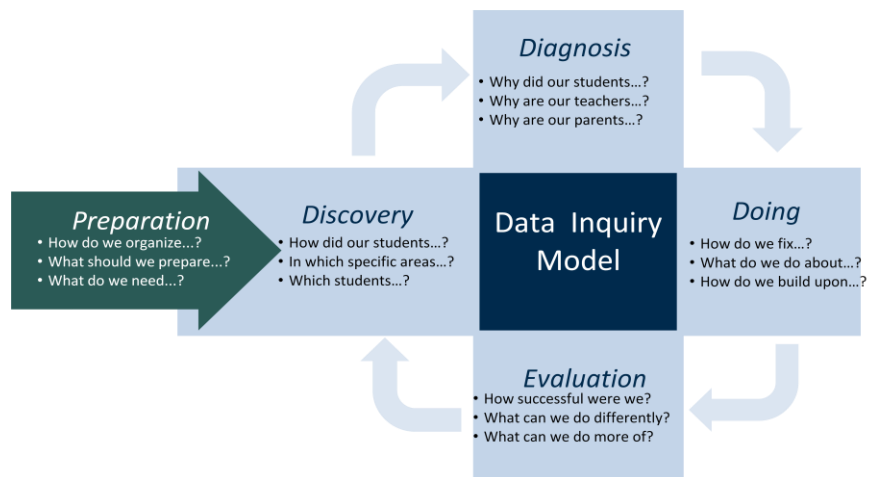


Figure 2: The Data-Driven Inquiry Model

The model has the following phases of inquiry: Discovery, Diagnosis, Doing, and Evaluation. The inquiry cycle is preceded by a Preparation phase which allows for proper planning and building the capacity, competencies, and orientations in the team to work collaboratively together. The Data Use Course is based on the model and presents each stage of the inquiry process sequentially to guide a PLC through all critical steps of the inquiry process. In addition to guiding the PLCs through a structured professional development process, the Data Use Course also helps participants develop the technical, analytical, and collaborative skills necessary to implement the inquiry model in their schools and classrooms.

### Data Use Course Curriculum

The course curriculum consists of 14 three-hour modules:

Phase of the Data-Driven Inquiry Model	List of Modules
Preparation How do we organize for data use?	Module 1: Getting Started Module 2: Data Literacy



<b>Discovery</b> What is the issue or problem?	Module 3: Identifying a Problem Module 4: Evaluating Data Module 5: Analyzing Discovery Data
<b>Diagnosis</b> What is the root cause?	Module 6: Hypothesizing Root Causes Module 7: Analyzing Root Cause Data
<b>Doing</b> What are we going to do about it?	Module 8: Brainstorming Initiatives Module 9: Developing Action Plans Module 10: Monitoring Implementation
<b>Evaluation</b> What results did we get?	Module 11: Preparing for Evaluation
<b>Additional modules</b>	Module 12: Building a data use improvement plan Module 13: Moving forward Module 14: Building a vision for data use

Table 1: Data Use Course Curriculum

Modules 1 and 2 are Preparation modules that build the capacity of the PLC to work collaboratively with data. Modules 3 to 11 guide the PLC through each stage of the data-driven inquiry model: Discovery, Diagnosis, Doing, and Evaluation. Module 12 helps the PLC use their newly-gained knowledge and skills to build an improvement plan for broader data use in the school. In Module 13 the PLC members can continue to apply what they learned in Modules 3 to 11 to deepen the investigation of the initial problem identified by the PLC, or they can follow the same process to address a new problem. In Module 14 PLCs summarize the progress they have made in using data in their school and reflect upon the initiatives they implemented throughout the course. They prepare for continuing the data use work into the future throughout the school by developing a school-wide vision for data use.

### Introduction to Professional Learning Communities

The DATAUSE project is currently being implemented in 10 schools across Europe. This paper focuses on the implementation in one gymnasium located in the lodzkie region of Poland. The gymnasium has nearly 400 students in grades 7, 8 and 9. The PLC at this gymnasium consists of five members: a deputy head-teacher, school psychologist, two math teachers, and an English teacher. The PLC also identified two team members who were sent to London in August of 2011 to be trained as data coaches. The data coaches were tasked with:

- Attending an intensive three-day training workshop on data use;



- Delivering the data use curriculum to the school’s PLC over the course of a year;
- Providing coaching and consulting on data use in their school;
- Serving as a liaison between the school and the project’s team of partners; and
- Maintaining positive momentum in their school while communicating needs and lessons learned to the project partners.

The organizing structure that is in place in the school is depicted below:

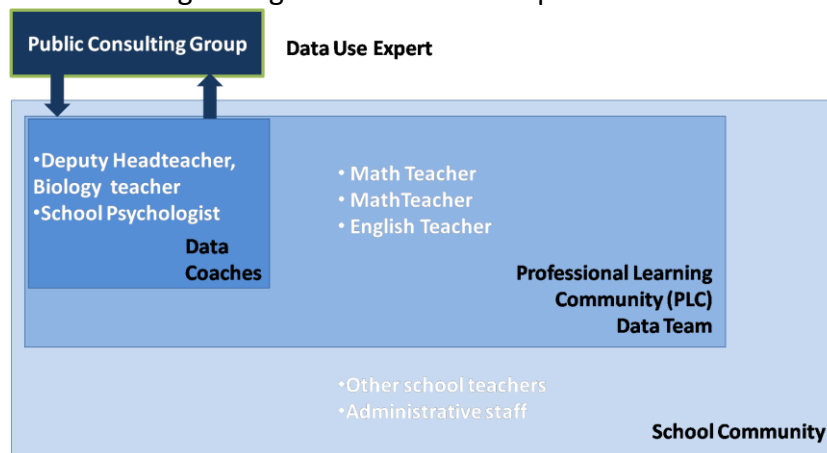


Figure 3: The PLC structure

Public Consulting Group was the project partner assigned to support the delivery of the course to the participating schools in Poland by providing consultancy and advice to the data coaches and supporting the team as needed. In this capacity, PCG worked directly with the PLC described in this paper.

The PLC members, who are currently halfway through the course, were asked to reflect on their experience so far in working through the data-driven inquiry cycle in their school. These reflections are summarized in the sections that follow.

### Phase 1: Preparation

In this phase the team acquainted themselves with the Data Use Course materials, the general Data Use Theory of Action and the inquiry model which provided context and a framework for their work. The team also established norms to guide their work. Examples of the team’s norms include:

- We perform our duties as team members in a conscientious way
- We are actively involved in the course activities
- We start and end meetings on time
- We work together to meet the course goals





- In case of doubt, we ask for clarification
- We trust each other, and we are open towards each other
- We work in a business-like manner
- We try to formulate constructive feedback and comments
- We do not criticize other members of the team

In this phase the PLC also developed a communication organizer template as well as templates for meeting agendas and meeting notes to facilitate cooperation and communication with other members of the faculty. In order to be transparent with the rest of the faculty, the team decided to post all their findings on a message board available to all teachers. They also decided to provide regular updates during formal school faculty meetings.

Prior to the Preparation phase, a data use survey was administered to the entire school faculty. During the Preparation phase, the team collaboratively analyzed the results of the survey and identified their school’s strengths as well as areas in need of improvement:

Strengths	Areas for improvement
<ul style="list-style-type: none"> <li>• Common belief in the importance of using multiple sources of data to assess student knowledge and skills</li> <li>• Agreement as to the importance of analyzing data to the process of modifying instruction</li> <li>• Support from school leadership when it comes to using data to inform instruction</li> </ul>	<ul style="list-style-type: none"> <li>• Using student outcomes data to set up objectives / tasks for individual students</li> <li>• Using student outcomes data to identify needs and to plan and adjust teaching to the needs of gifted students</li> <li>• Using student outcomes data to identify needs and to plan and adjust teaching to the needs of lower aptitude students</li> </ul>

Table 2: Strengths and weaknesses identified by a PLC based on data use survey results

The survey indicated that the faculty ranked high in beliefs about the use of data as well as in providing supports for using data in school. However, the survey also revealed areas in need of improvement when it came to using data for instructional improvement, especially towards gifted students and students with lower aptitude. These findings from the survey helped to frame the PLC’s approach to the Data Use Course, as well as their decisions about how to keep the rest of the school’s faculty informed of the process.

During the Preparation phase the PLC also acquainted themselves with the terminology around data use, they analyzed the kinds of assessments conducted in their school, and they established a data inventory. The data inventory included data already available in their school as well identifying data not currently being collected which could be useful in solving educational problems. The PLC’s final data inventory is shown below:



Assessment Data	Other Types of Data	Data Not Currently Collected
<ul style="list-style-type: none"> <li>• Assessments checking knowledge</li> <li>• Assessments checking competences, e.g. reading comprehension</li> <li>• Assessments checking vocational predispositions</li> <li>• Assessments checking interests and talents</li> <li>• Gymnasium assessments conducted internally by school</li> <li>• Diagnostic assessments</li> <li>• Aptitude assessments</li> </ul>	<ul style="list-style-type: none"> <li>• Student personal data</li> <li>• Health cards</li> <li>• Results of the national external exam held at the end of the primary school</li> <li>• Mid-term grades, semester reports, and final grades</li> <li>• Current grades of the students</li> <li>• Reports on student behavior</li> <li>• Opinions and statements from the Pedagogical and Psychological Assistance Center</li> <li>• Results of external exams at the end of gymnasium</li> <li>• Results of mock exams</li> <li>• Results of tests and competency tests aimed at diagnosing students' level of knowledge and competence</li> <li>• Educational Value-Added data for school, classes, girls and boys, teachers, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Information about participation of students in extracurricular activities and their achieved results</li> <li>• Results of academic competitions held in the primary school and gymnasium</li> <li>• Information about student predispositions (motivation assessment)</li> <li>• Specific suggestions from the pedagogical and psychological assistance center concerning the kinds of adaptations teachers should apply at various subjects Information from the primary school related to individual students</li> <li>• Information about the accommodations for students with the statement from the pedagogical and psychological assistance center</li> <li>• Information about the participation of students in therapeutic and remedial activities</li> <li>• Certificates from doctors</li> <li>• Information from local social care centers or court officials concerning living conditions of students</li> </ul>

Table 3: Data Inventory

At the end of the Preparation phase, the team reviewed a list of common problems that can be analyzed through a data inquiry process. This gave the team a sense of what types of problems can be considered, which areas to investigate, and where to look more in depth—all in preparation for the next phase.

When reflecting upon the Preparation phase, PLC members pointed out that their primary challenge was to internalize the concept of data use and the data inquiry process. For example, it took some time for the concept of data use, the language associated with it, and the data-driven inquiry process to move from the abstract to something more concrete. They unanimously pointed out how important the support of their head-teacher was in helping them understand the larger context of data use for school improvement and how this could be operationalized and implemented in their school.

There were moments when PLC members felt they reached a milestone in their understanding. For example, team members reported that participation in the project made them reflect upon the merits of using data for school improvement, which had not previously been done in a structured and focused way in their school. Additionally, the analysis of the data use survey showed them how rarely they use data related to students with special educational needs, especially for planning their instructional activities. The construction of their data inventory helped them realize how much data already existed in their school and also how useful it might be to collect additional data.

The PLC made a critical decision to try to familiarize the entire school faculty with the data use project, and to some extent to also involve them in the project. They felt this proactive involvement of the whole faculty early in the process was key to the future and sustained success of the project. The PLC took on the role of a steering committee for the rest of the faculty, and they made great effort to explain the goals of the course to the rest of the faculty. This took the form of both formal and informal communication. In the spirit of involving the faculty in the process, the team decided to share the results of the survey as well as their conclusions. They initiated a general school discussion on the kinds of problems teachers see in the school that need to be investigated. The PLC also involved the teachers in organizing the existing data and collecting additional data. This involvement gave teachers an immediate appreciation for the kinds of data they have access to.

### *Phase 2: Discovery*

During the Discovery phase the team used data to identify a critical problem existing in school, which, if solved, would move student learning forward. There seemed to be consensus within the school that the PLC should focus on students with special education needs. To begin the discovery process, the team brainstormed a list of questions around students with special needs:

1. What are the characteristics of students with special educational needs in our school across years?
2. In what ways do students with special educational needs take advantage of available extracurricular activities?



3. Which students with high academic performance do not succeed in academic competitions?
4. Which students finishing primary school with high results show poor performance in gymnasium?
5. Which students show little to no increase in knowledge according to the EWD (educational added value) indicator?
6. How do students prepare for learning? What are their learning preferences?
7. Which students do not get promoted to the next class?

They prioritized this list, discussed and synthesized it, and finally articulated a “focusing” question that they felt was critical to addressing the learning needs of students with special needs:

***In which areas of instruction is there a need for improvement in the quality of teaching and learning of students with special educational needs?***

In order to answer this question the team referred to the data inventory developed in the Preparation phase. They identified the data sources they considered most useful for addressing the question, adding some additional data sources to the data inventory in the process. In order to answer their focusing question, the team decided on the following data sources:

- Results from the external exams at the end of gymnasium, and Educational Value Added indicators for the school in the school years: 2008/2009, 2009/2010, 2010/2011 and 2011/2012
- Enrollment reports from 2009/2010, 2010/2011 and 2011/2012
- Results of the diagnosis of Polish language and math competencies disaggregated into subskills for students currently enrolled in school
- Current students’ end-of-year and mid-year results
- A list of students with special educational needs categorized by the type of special needs, the classes they are assigned to, and their achievements
- A list of students participating in extracurricular activities organized by the primary school
- A list of gymnasium students who in the primary school were successful in areas of their interest as discovered through school-organized extracurricular activities (and a similar list for activities outside the school)
- A list of gymnasium students who in the primary school participated in extracurricular activities organized outside the school
- A list of external academic competitions in which the gymnasium students took part in 2010/2011 (categorized by subject)
- A list of academic competitions in which the students were successful





- A list of academic competitions in which the students were successful, compared to all academic competitions in which they took part, categorized by subject areas
- A list of students taking part in academic competitions in 2010/2011, categorized by subject areas
- A report with numbers of winners and finalists in academic competitions between 2003 and 2010
- A report on participation of students with different disabilities and without disabilities in additional activities organized by the school
- A list of extracurricular activities offered by the school and their availability for students
- Results from the most recent motivation assessment administered at the school
- A report on the types of student special educational needs including the reports from the psychological and pedagogical centers
- Information about students threatened with social exclusion
- A list of students under court probation

This list of data represented a significantly larger data set than was needed to answer the PLCs focusing question. The team decided to collect such a robust set of data so that they could jointly build their common understanding of the context and better understand the school's situation as a whole. They felt that this was important to do before digging deeper into their focusing question. They also saw this as an investment in building a foundation for their future data work.

All of these data were collected and compiled in various forms—reports with students' names, aggregate tables, and visual charts and graphs. In most cases the data were further compiled into a multimedia presentation so that the results could be easily shared with other faculty. The team reviewed the data sets and data displays that they produced using a data quality checklist and protocol provided in the course materials. The data quality checklist included quality criteria such as validity, reliability, completeness, accuracy, and representativeness. After reviewing and compiling the data, the team turned their attention to analyzing the data. They started by selecting the data which they felt best addressed their focusing question. The collaborative data analysis protocol that is provided in the Data Use Course emphasizes the importance of making factual observations without jumping to inference. The team members all agreed that it was difficult for them to follow this protocol—there was a tendency to want to move quickly to making inferences that weren't necessarily supported in the data. The data coaches helped them pinpoint the differences between factual observation and making inferences, and they corrected the team whenever team members mixed observations with inferences.

Through an iterative and collaborative analysis of the data, the team formulated three problems related to three populations of students with special education needs: gifted



students, students with lower intellectual capabilities, and students repeating grades. At this stage of the process the team developed a detailed list of individual students falling into these three categories and analyzed their performance at the aggregate level, also disaggregating the data into subgroups by year, class, type of disability, and gender. They also analyzed individual student data longitudinally. While they explored each of these three types of students throughout the inquiry process, this paper will focus only on the third category of students: students who repeat a grade. The team made the following observation regarding these students: ***It seems that students repeating grades do not obtain satisfactory results.*** While this observation may seem obvious, seeing the poor progress of these students in the data reinforced the need to dig further. The team formulated this follow-on focusing question: ***What are the areas of strength and weakness of students repeating grades as shown by Polish and math assessments?*** Again, the team went back to the data sets to try to find the answer to this question. They arrived at the following observations:

- 10 students had repeated a grade
- There were 2 girls and 8 boys
- These students performed best in reading (in Polish) and in reading comprehension (in math)
- They performed the worst in spelling

From these factual observations, the team hypothesized:

- Reading in Polish and math has been mastered sufficiently
- Students have not mastered spelling

These observations and hypotheses led the team to formulate their statement of the student learning problem: ***Results of students repeating grades from the tests in Polish are below expectations, especially in the area of spelling.***

This process of defining a problem was viewed by the team as very demanding. It was difficult to drill down to one focusing question and then verbalize it clearly enough to present the problem in a way that could be investigated. The PLC and the school's faculty invested a lot of time and effort to gather data, organize them, analyze, interpret, synthesize, and prioritize the conclusions. Since the data they gathered in the beginning significantly exceeded what they needed in order to answer the focusing question, they had to put much effort into filtering the data down to those data which were relevant to the focusing question. Once they had their relevant data, it turned out that some of the data were either incomplete or too aggregate, so they needed to fill in the gaps and drill down to compile additional data sets.

For this phase of the inquiry process, it was very helpful that the PLC had math teachers on the team who were very familiar with Excel and creating data displays. They followed a collaborative process for choosing which data displays best met their needs. During this



process of collecting the general school data, the team was struck by several observations about their school, their students, and their teachers (observations that weren't necessarily related to their area of exploration). For example they found out that:

- While catching up on the lessons they missed, students prefer to receive help from their peers rather than from the teacher
- Gifted students take advantage of extracurricular activities to a surprisingly small degree
- Students expect to be informed individually if they should attend extracurricular activities—they do not personalize the information broadcast to the whole student body, as they are not fully aware which announcements apply to them
- Teachers need to pause and work on a definition of a gifted student in their school before they consider the best ways to address their needs

It should be noted how remarkable it was that the whole school faculty was involved in gathering and organizing the data. After the PLC analyzed the data and articulated the final problem statements, they informed the whole faculty about the outcomes and jointly discussed the identified problems during a school faculty meeting.

By way of example for this phase of the course, other school PLCs participating in the Data Use Course in Poland and the other partner countries articulated the following problem statements during the Discovery phase:

Example problem statements
We do not use in school data sufficiently to improve instruction and adjust it to the needs of students.
The system of assessments in our school is not standardized. Thus, student performance is sometimes overestimated and sometimes underestimated.
Our lower course students don't seem to achieve the math standards.
Our school has too many grade repeaters.
We don't know to what extent our students are prepared to reach the new math standards.
We need to raise the conversion (to at least grade C+) of our mid- to low-Level 4's in English at GCSE level (4.5 is the national average).

Table 4: Example problems tackled with Data Use Course in schools in Poland, Germany, UK, the Netherlands and Lithuania

### Phase 3: Diagnosis

In the Diagnosis phase the team hypothesized root causes of the identified problems. That is, they hypothesized what might be causing the problem they found with their students who repeat grades. After developing hypotheses, they collected and analyzed related data to



confirm their hypotheses for root cause. It was important to follow the same process for collaborative data analysis as they used during the Discovery phase, first making factual observations from the data, and only then forming careful inferences. Below is the set of root cause hypotheses the team developed related to their problem statement:

- Students repeating grades do not take advantage of remedial classes available in the school
- The attendance of students repeating grades on Polish and math lessons is low
- Students repeating grades do not take advantage of additional orthography classes offered by the school
- Deficiencies in the area of spelling are not sufficiently made up for during the didactic process in the gymnasium
- The number of hours spent on spelling during Polish lessons is too small

The team then turned back to their data to see if they could validate their root cause hypotheses, and in some cases they had to collect new data. They looked at the following data:

- % of lessons spent on spelling
- Participation of repeating students in Polish lessons
- Participation of repeating students in remedial classes in Polish
- Grades in Polish obtained by repeating students

The team verified the root cause hypotheses from these data. Some of the hypotheses which seemed very obvious in the beginning were not supported in the data, and some that seemed purely theoretical proved to be factual. After analyzing the data, they found that 80% of extracurricular classes organized in the school are of remedial character. They also found that only 4 out of 10 repeating students participate in the remedial classes, and that no repeating student decided to participate in more than one remedial class. These findings indicated that, while the school invests significantly in remedial courses, the students who need remediation the most are not enrolling in those courses. These observations from the data were very compelling, and the PLC formulated their final root cause statement: ***Students repeating grades do not feel motivated to participate in the remedial classes.***

Using this root cause statement, the team brainstormed ways in which their teaching and school practices might be contributing to the root cause (called the “problem of practice”) (Boudett, et al., 2005). This level of self-reflection on individual and school practice is critical to arriving at ideas for how the problem can be addressed. The team developed the following potential problems of practice:

- Teachers do not inform the students individually about the need to participate in the remedial classes.
- Teachers do not motivate the students sufficiently to participate in remedial classes.





- There is very little cooperation between students' and parents' and teachers.

Reflecting upon these possible problems, the PLC discussed each of them and finalized their articulation of the problem of practice: ***Teachers have not identified a successful motivation system for students who repeat grades to participate in the remedial classes.***

This disciplined process of diagnosing the problem of practice helped the team to reach a deep level of reflection upon their own practice. One protocol in particular, the “Why, Why, Why” protocol, helped the PLC arrive at their final problem of practice. In this protocol the team continued to ask themselves “why?” until they arrived at a set of final conclusions. This protocol opened up space for thoughtful consideration of multiple options for the problem of practice. Teachers understood the connection between their practice and the direct effect it had on students with respect to the student problem articulated earlier in the process. It was an extensive and fruitful exercise for the team to be thinking how their teaching affected student learning, motivation, and development. Armed with a clearly articulated problem of practice, the PLC was ready to enter into the Doing phase of the inquiry process.

#### *Phase 4: Doing*

In the Doing phase the team applied their knowledge and experience to identify high-impact strategies that would address the problem of practice. They assessed the feasibility of each strategy and finally chose the set of strategies they agreed should be implemented in their school:

- Teachers will individually inform students who repeat a grade about the need to attend remedial classes
- Teachers will inform students' parents individually about their children's participation in remedial classes and the offer of tutoring from teachers (and the times of these sessions)
- The school will establish a team to monitor students' attendance in the classes, with special attention to repeating students

It is important to note that each strategy the PLC formulated is within their control to influence. That is, they chose strategies that fell within areas of their responsibility rather than pointing to actions outside their locus of control. For each strategy, the team formulated measurable improvement targets and prepared an action plan to implement the strategy. They also prepared a plan to monitor the implementation of each strategy.

The PLC developed their action plans in the late fall of 2011, and at the time of the writing of this paper, the PLC had not yet begun implementation. For an immediate next step, the PLC plans to discuss their strategies and action plans with the other faculty members. The PLC members believe that it is important for the whole faculty to provide feedback on the



strategies, since the strategies will affect the practice of all teachers. The PLC expects some challenges with reviewing their action plans with teachers due to time constraints. Still, they realize that choosing the right strategies requires considering what actions are feasible and how the faculty would actually implement them. It is also the PLC's intention to include other faculty members in monitoring the implementation, which should help build broad-based ownership of not only the implementation, but also the outcomes.

### *Phase 5: Evaluation*

It is expected that the PLC will begin evaluating their actions shortly after implementation begins, both by monitoring implementation as well as monitoring whether or not they are seeing the intended outcomes in terms of higher enrollment in remedial courses by students who repeat grades, and ultimately in improved spelling results. Before the end of the school year the PLC members plan to carry out the research by means of surveys, questionnaires, and analysis of existing data sources. Information gathered throughout the evaluation phase will supplement the data inventory they developed during the Preparation phase.

Should it turn out that the implemented strategies have not led to the intended outcomes, they will have to research whether the strategies were implemented faithfully and fully, and if they were, they will then need to consider modifying their strategies or choosing different strategies to implement. The PLC anticipates that the Evaluation phase will also serve as a summary of all their work will help them evaluate whether time devoted to data use was fruitful, bringing concrete benefits to students and teachers.

### *Summary*

Although the PLC is only halfway through the year-long Data Use Course, they were asked to reflect on the process so far. They noted the following advantages of the Data Use Course:

- Forces teachers to fully investigate the problems
- Using data helps teachers look objectively at problems in the school
- Represents a new way to solve old problems
- Shows how to plan one's work so that it brings measurable effects, making actions purposeful, conscious, and effective
- Raises awareness of the importance of data for solving problems in the school
- Forces the faculty to get structured and organized, e.g. by preparing an inventory of all data accessible in school
- Helps the faculty to come to consensus on what kinds of actions to take



- The protocols and templates help to structure the flow of information within the school faculty
- Builds the discipline of making factual observations, supported by data, rather than speculations and inferences
- Helps teachers become more professional by reflecting upon their practice, and the results of their work
- Helps teachers orient themselves to helping students reach higher levels of achievement

The team also noted several challenges to participating in the Data Use Course:

- Fears related to getting involved in a new and seemingly abstract course
- The inquiry process takes a significant amount of time
- Resistance from the teachers due to additional responsibilities related to the inquiry process

The PLC members also pointed to the conditions that have been essential for the success of the course, and that will be necessary for sustained data use in their school:

- Convincing the management of the school to take part in the process
- Ensuring appropriate staffing of the team and making sure there is a leader appointed
- Involving the whole faculty in the process

The PLC members also noted that while the inquiry process provides the methodology, structure, and process to guide school improvement, it will not automatically provide ready solutions for school problems.

The PLC team also summarized the benefits they see for students and parents:

**Students:**

- Helps teachers understand and address students' learning problems
- Focuses teachers on helping students in concrete ways
- Utilizes objective, evidence-based information about students (e.g. attendance, participation in extracurricular activities, outcomes)

**Parents:**

- Gives them objective, reliable information about their children
- Conviction that teachers are fully vested in taking actions, which could help their children's learning needs
- Conviction of the professionalism of teachers' actions



## Conclusions

The PLC reviewed in this paper helped to identify the obstacles that schools and data teams should be aware of when they embark on a similar process of using data in their schools. Among the major obstacles are: the tendency of teachers to take action quickly and to think that the action will have an immediate impact; the length of the inquiry process; the need for whole-faculty involvement; the amount of time and effort required for the inquiry process; and resistance from teachers who do not fully understand how data can help them improve teaching and learning.

PLC members also stated that those who engage in a structured data-driven inquiry process should be aware that “data use” requires not only the analysis of qualitative and quantitative data, but also a commitment to an improvement process that requires time and effort. Collaboration requires a large level of involvement from *all* of the team members. Engaging successfully in the process of data-driven improvement also requires that all faculty members be willing to reflect upon and share their instructional practice and productively discuss the challenges in the school. These are not cultural norms in many schools, but they are absolutely critical to the process of continuous improvement. Finally, the PLC members reviewed in this paper pointed out that using data in their school allowed them to see things that were not immediately evident, and that it has been worthwhile to collect data, analyze it, and collectively plan for concrete school improvements that will ultimately help prepare their students for academic success.



### About the authors:

**Małgorzata Marciniak** manages projects, provides consultancy and delivers professional development trainings to educators. Ms. Marciniak has experience as a methodology advisor and teacher at the elementary, secondary and university levels. She has managerial experience in international educational projects gained in Europe and in the US. She currently manages a European project entitled: *Using Data for School and Student Improvement* [www.datauseproject.eu](http://www.datauseproject.eu) funded by European Commission with participation of partners from the UK, Germany, the Netherlands, Lithuania, and Poland. She is pursuing her PhD on data use competences of gymnasium teachers at the University of Lodz in Poland. Her research also includes school leadership and change management in education. She holds a Master degree in English Philology from University of Lodz. Ms. Marciniak studied intercultural communications at the University of Tampere in Finland and project management at Harvard University. She is a certified Project Management Professional (PMP).

**David Ronka** designs and delivers professional development for school leaders helping them use data to improve student outcomes, implements educational data management systems for school districts, and helps schools design informative and useful data reports. Mr. Ronka earned his undergraduate degrees (civil engineering and German) from Tufts University, and his Master of Education from Harvard. He has been a Teaching Fellow for Harvard's Data Wise summer institute, working with educators around the world to help them make better use of their data. Mr. Ronka is contributing author of *Data Wise in Action: Stories of Schools Using Data to Improve Teaching and Learning* (Boudett & Steele, 2007) and co-author of *Answering the Questions that Count*, Education Leadership (Ronka, et al., 2008).

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