Using Data for Improving School and Student Performance

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

Introduction

Education and Culture DG

Lifelong Learning Programme

PUBLIC CONSULTING GROUP

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Specialist Schools and Academies Trust

THE SCHOOLS NETWORK™

ŠIUOLAIKINIŲ DIDAKTIKŲ CENTRAS

MODERN DIDACTICS CENTRE

UNIVERSITY OF TWENTE.

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Institut für Informationsmanagement Bremen GmbH

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DATAUSE Project Overview

Data has become increasingly important in an age of increased accountability and significant school autonomy. As schools are being held more accountable for the education they provide the data-driven decision making is becoming increasingly important. Data can be used to formulate appropriate and effective education policy and to measure the effectiveness of programmes 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. But despite the leverage that can be gained by using data effectively, many schools still struggle with data-driven decision-making. Despite the importance of using data, very little training exists throughout Europe to help school leaders and their staff use data effectively. The DATAUSE project was created to build the capacity of school leaders and staff to establish learning communities where data is used to improve educational outcomes.

The DATAUSE project, funded by the EU Comenius Programme from 1 November 2010 to 31 October 2012, involves 5 partners from Poland, Germany, the Netherlands, the UK and Lithuania. The experience and expertise brought to the DATAUSE project by the partners has contributed significantly to realising 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.

Project Outcomes

The anticipated outcomes of the DATAUSE project include:

- websites in each of the partners' languages presenting the DATAUSE project and its deliverables
- comparative research report on data use in each of the partner countries
- a data use survey that can be used by schools to identify their strengths and areas for improved data use
- Professional Learning Communities (PLCs) established in each partner country that champion the use of data for school improvement

- Data Use for School Improvement – a professional development course designed to build school-based capacity to use data that includes extensive support materials

The professional development course and data use survey bring to European educators a set of tools that will help them build their capacity to use data to improve teaching and learning. The survey instrument can be used by school leaders to gauge the extent of data use within their school and identify areas of strength and areas of need. The Data Use for School Improvement course includes tools and activities that help build capacity within school-based teams to establish a culture of utilising data to inform decisions about policy, programmes and instructional practice. It is designed to build the capacity of school Professional Learning Communities to use data and for them in turn to build the capacity of teachers throughout the school to better use their data. The benefits for each school taking part in the data use course include:

- practising the process of data collection and analysis to solve school problems through problem identification, root cause analysis, action planning, initiative implementation and monitoring and evaluation
- developing a professional school-based team proficient in data use
- hands-on application of data use principles to address an urgent issue identified by the school

Project Partners

The DATAUSE project partners brought their unique experience and expertise to collaboratively produce high quality courseware and tools that address the needs of schools of the 21st century. The project partners include:

Public Consulting Group (PCG) www.pcgeu.com, DATAUSE project coordinator, a global management consulting firm with more than 1000 professionals in 33 offices around the U.S., Canada and Poland. For nearly 25 years, PCG has been helping central and local government agencies maximize resources, achieve their performance goals and optimise services to their clients. PCG professionals are dedicated to bringing proven consulting methodologies, subject matter expertise and innovative technology solutions to the public sector. The PCG education

team has the expertise, capacity and scale to help educators improve their decision making processes and achieve measurable results in the areas of education analytics, school accountability and supervision and student success planning. PCG aims to be a leading provider of consulting services that combine management best practices with analytics and innovative technology to clients in Poland and throughout the European Union. PCG takes a long-term approach towards building business and developing a network of partners with similar interests in expanding educational capacity and improving outcomes for students.

The Institute for Information Management Bremen GmbH (Ifib) www.ifib.de, DATAUSE project partner, a not-for-profit research and consulting organisation at the University of Bremen. Ifib's main fields of work are e-government and educational technologies; these two branches are working closely together in joint projects. Since 2003, the Institute of Information Management Bremen (Ifib) is doing empirical research and formative evaluation of ICT integration in public institutions. The educational technology branch of ifib conducted several research projects on data use in schools and is currently cooperating with different State Education Ministries in Germany. Ifib hosted the first international conference of data-driven decision-making in schools which was documented in an edited book.

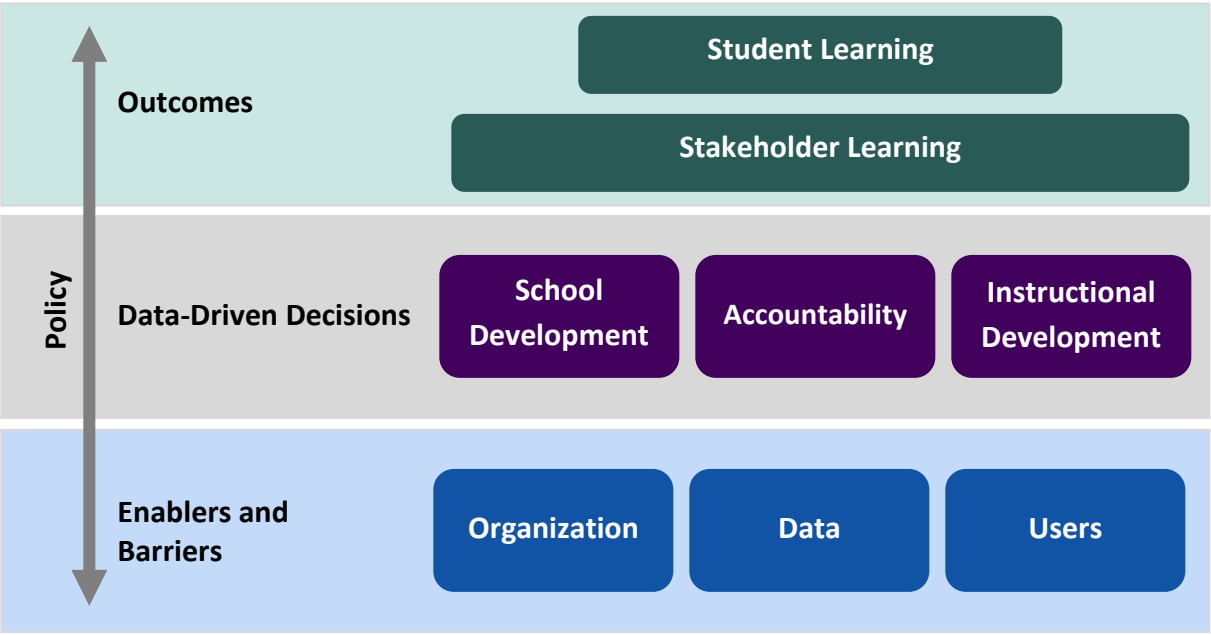
Modern Didactics Center (MDC) www.sdcentras.lt, DATAUSE project partner, a non-profit, non-governmental organisation for continuing adult education and in-service training. Modern Didactics Center was established in 1999 as inter-university Center by an initiative of Vilnius Pedagogical University and the Open Society Fund-Lithuania. MDC initiates, develops and runs national and international projects, develops new programmess and courses for initial teacher education and in-service training, delivers different training programmes, creates methodological materials for schools, provides consultations and expertise on project management, teaching & learning strategies, lessons planning and assessment, school community development etc. MDC also organises study visits, seminars, conferences, summer schools on different educational topics, organises research on urgent educational issues, and publishes project products.

Specialist Schools and Academies Trust (SSAT) www.ssatrust.org.uk, DATAUSE project partner, an independent, not-for-profit membership organisation dedicated to raising levels of

achievement in education. SSAT has a membership of over 5,600 schools and organisations. SSAT is a registered charity. S SAT works with head teachers, teachers and students to encourage them to develop and share new and effective teaching and learning practice and to improve schools to raise standards and levels of achievement. SSAT's Data Enabler programme reaches a significant proportion of England's secondary schools. This work enables SSAT to engage in next and best practice in the use of data to raise standards.

The University of Twente (UT.) http://www.utwente.nl/gw/co/en/, DATAUSE project partner, based on three central pillars: education, research and valorization. UT strives to excel in education, research and valorisation because talent attracts talent. University of Twente is well known for its innovative educational research. The Department involved in this project is the Department of Curriculum Design & Educational Innovation (CD&EI). Researchers at this department are, among other things, specialists in the field of data-driven decision making, design research and professional development of school staff. One of the University's research areas is how to support schools in the effective use of data, such as assessment data, survey data and student background data. UT is involved in national as well as international projects on data use, they founded and chair an international data use network: http://www.icsei.net/icsei2011/datausenetwork

Data Use Theory of Action



As part of the DATAUSE project the partners conducted a comparative study of data use which informed the development of a Data Use Theory of Action. This construct provided the framework for the data use survey and the foundations for the data use professional development course.

The Data Use Theory of Action recognises policy as the major influence on data use in the schools. School policies affect each of the following foundations for effective data use by either enabling or erecting barriers to them.

- the **organisation** (*eg* availability of data use expertise, teacher collaboration time assigned for data use),
- the **data** (*eg* accessibility, quality) and
- the **users** (*eg* knowledge, skills and attitudes)

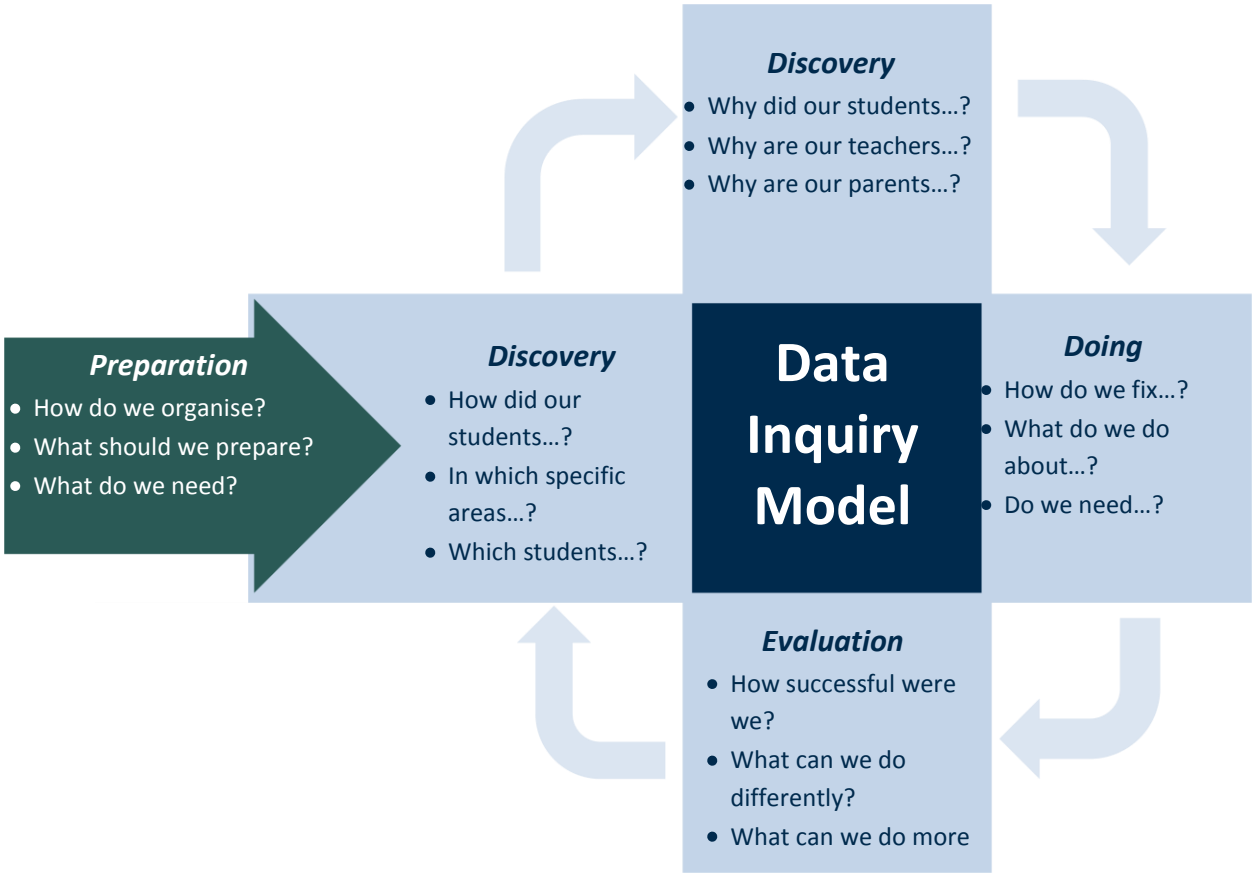
School policies impact how extensively, if at all, school personnel use data to inform their decisions. The Data Use Theory of Action identifies three types of data-driven decision making:

- for **school development** (*eg* policy development, teacher professional development, flexible groupings),
- for **accountability** purposes (*eg* meeting legal demands, communication with stakeholders) and
- for **instructional development** (*eg* monitoring progress, adjusting instruction).

If data is used for these different purposes, this may lead to **stakeholder** (*eg* teachers, school leaders, parents) **learning**. For example, a teacher might decide to make instructional changes based on data (data-driven decisions). This leads to improved instruction by the teacher (outcome: teacher stakeholder learning). Stakeholder learning in turn may lead to **student learning** (*eg* inquiry of students into their own learning and improved student achievement).

Implementation of the Data Use Theory of Action

After developing the general Data Use Theory of Action the project partners designed an inquiry model to provide a framework to support PLCs as they learn how to use data for problem solving and decision making in their schools. The model has the following stages of inquiry: Discovery, Diagnosis, Doing and Evaluation. The inquiry needs to be proceeded by the Preparation stage which allows for proper planning, building the capacity and competences in the team of educators collaboratively working to improve student outcomes. The Data Use Professional Development course is based on this model. In the course, the presented stages guide a PLC through all critical steps of the inquiry process, allowing the opportunity for the PLC to iteratively learn the process. In addition to guiding the PLCs through a structured development process the DATAUSE Course focuses also on helping participants to develop the technical, analytical and collaborative skills necessary to implement the Data Use Theory of Action and to use data to improve teaching and learning.



DATAUSE Course Learning Goals

Phase	Learning Goals
Preparation How do we organize for data use?	☐ Assess data use within the school ☐ Clarify roles and responsibilities ☐ Inventory available data ☐ Build assessment literacy
Discovery What's the issue or problem?	☐ Identify a critical problem or issue in the school that will be the focus of inquiry ☐ Articulate questions that will help the PLC accurately define and describe the problem or issue ☐ Identify data sources that will help inform the discovery process (e.g. student learning data)
Diagnosis What's the root cause?	☐ Analyse data and formulate a clear evidence-based statement of the problem or issue that needs to be addressed ☐ Formulate hypotheses that explain the root cause of the problem or issue ☐ Identify additional data sources needed to confirm the root cause (e.g. school process and instruction data) ☐ Analyse root cause data and clearly articulate the root cause, which, if addressed, will fix the problem or issue articulated in Discovery
Doing What are we going to do about it?	☐ Identify initiatives that will fix the root cause identified in Diagnosis and select the highest impact initiative ☐ Break down the initiative into an action plan ☐ Identify how the plan will be monitored and how success will be measured ☐ Implement the initiative
Evaluation What results did we get?	☐ Plan for evaluation ☐ Reassess data use within the school

DATAUSE Course Organisation and Curriculum

The table on the following pages outlines each module in terms of learning objectives, activities, and homework. Modules 1 and 2 are Preparation modules that will build the capacity of the PLC to engage in data work. Sessions 3 to 11 take the PLC through each stage of the data use inquiry model: Discovery, Diagnosis, Doing and Evaluation. This material constitutes obligatory elements of the course program and allows the PLC to complete the whole inquiry process within one school year.

These course materials include also a set of optional materials that help the PLCs to continue the work with data use for school improvement. After completion of the obligatory programme, Module 12 helps the PLC data team use their newly gained knowledge and skills to build an improvement plan for 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 follow the same process to address a new problem. The emphasis will be on deepening the work and increasing autonomy and expertise within the PLC. In Module 14 PLCs will summarise the progress they have made in data use in their school and reflect upon the initiatives they implemented throughout the course. They will prepare for continuing the data use work into the future throughout the school by crafting and seeking approval for a school-wide vision for data use.

Each of the modules is planned for a delivery within an up to 3 hour session. Each activity presented in the guidebook includes time estimation which is a minimum allocation required to go through an activity. The Data Coach who will deliver the session will adjust the real time needed to go through activities based on the PLC's specificity, data use experience, complexity of the problem tackled, amount of data for analysis etc. In addition to that there are 10 check-in meetings in-between the sessions with a data coach in order to work on the homework and prepare for the forthcoming session. The following table presents an overview of the course content and structure.

Data Use Course Curriculum

Phase: Preparation - How do we organize for data use?			
Module Title	PLCs will be able to:	Activities	Homework
Module 1: Getting Started	▪ Describe the framework for data use. ▪ Create norms to promote effective collaboration. ▪ Analyse survey results to identify perceived strengths and weaknesses in the use of data in your school. ▪ Use communication tools to help make the work of your PLC transparent to all stakeholders in your school community. ▪ Use tools and strategies to organise for effective collaborative work.	▪ Norm Setting ▪ Data Use Survey Analysis ▪ Communication Organiser Template ▪ PLC Data Meeting Agenda Template ▪ PLC Data Meeting Notes Template	▪ Develop an agenda for a meeting to be held prior to your next session. ▪ Use the PLC Data Meeting Notes Template to record the results of the meeting. ▪ Use the Communication Organiser Template to help develop and distribute communications on results of the Data Use Survey and your findings to the school community, and goals of the data use project to stakeholders.
Module 2: Data Literacy	▪ Describe the types of assessments used in your schools. ▪ Understand data use terms and concepts. ▪ Collaboratively create a data inventory that documents all data available in your school. ▪ Prepare to identify a significant student related issue to investigate	▪ Understanding Assessments Used in Your School ▪ Data Use Survey Analysis ▪ Creating an Inventory of Data in Your School ▪ Asking the Right Questions	▪ Individually, review the examples in “Activity 2.4 – Asking the Right Questions” to begin to identify issues for investigation. ▪ Meet as a team to identify several student related issues or problems to investigate (Remember to develop an agenda and record meeting minutes any time the team meets!) ▪ Bring your issues or problems to our next session for refinement. ▪ Continue to develop your data inventory. Bring the completed inventory to the next session.

Phase: Discovery — What's the issue or problem?			
Module Title	PLCs will be able to:	Activities	Homework
Module 3: Identifying a Problem	▪ Identify a critical problem or issue in the school on which to focus your inquiry. ▪ Develop a discovery focusing question that will help the PLC accurately define and describe the problem or issue. ▪ Identify data elements and sources that will help inform the discovery process. ▪ Recognise high quality data and describe the characteristics of a good data display.	▪ Focusing Question Formulation ▪ Identifying and Locating Data Sources	▪ Using the data inventory you created in Module 2 as well as the information that you generated in Activity 3.2, collect data related to your focusing question. ▪ Build data displays prior to the next session that "tell a story" about what the data say about your focusing question.
Module 4: Evaluating Data	▪ Evaluate the quality of collected data ▪ Critique your data displays ▪ Plan for improvements	▪ Assessing Data Quality ▪ Assessing Data Display Quality	▪ Use the information generated in activities 4.1 and 4.2 to make improvements in your data set and data display.

Phase: Diagnosis— What's the root cause?			
Module Title	PLCs will be able to:	Activities	Homework
Module 5: Analysing Discovery Data	▪ Apply the collaborative data analysis process. ▪ Make factual observations from data sets and displays. ▪ Form inferences from factual observations of the discovery data. ▪ Articulate a clear, evidence-based statement of the problem. ▪ Formulate clarifying questions to refine the problem. ▪ Identify additional data needed to answer the clarifying questions. ▪ Develop a plan for the collection, display, and analysis of the additional data sets.	▪ Data Analysis Activity ▪ Problem Statement Worksheet ▪ Clarifying Question Formulation Activity ▪ Identifying and Locating Data Sources Activity	▪ Determine if your PLC has a quality problem statement. ▪ If it is determined that your problem statement needs to be refined, complete activities 5.3-Clarifying Question Formulation and 5.4-Identifying and Locating Data Sources. ▪ Collect the data necessary to address your PLC's clarifying questions. ▪ Generate high quality data displays to communicate what the data say about each of your clarifying questions.
Module 6: Hypothesising Root Causes	▪ Refine the evidence-based problem, if necessary, based on any clarifying questions. ▪ Hypothesise the root cause of your problem. ▪ Identify additional data needed to confirm the hypothesized root cause.	▪ Refining Evidence-based Problem Statement ▪ Why? Why? Why? ▪ Digging into Root Cause Data ▪ Building Your Knowledge Base ▪ Consult Your Colleagues Worksheet	▪ Using the Digging into Root Cause Data Template, collect and display any additional data needed to test your root cause hypothesis.
Module 7: Analysing Root Cause Data	▪ Confirm the root cause of the identified problem ▪ Collect research and best practice examples on ways to address the root cause of the problem. ▪ Identify staff, outside of the PLC data team, who may provide insight into ways to address the root cause of the problem.	▪ Root Cause Data Analysis ▪ Problem of Practice Worksheet ▪ Building Your Knowledge Base ▪ Consult Your Colleagues Worksheet	▪ Investigate the practice and research literature to gain more knowledge about the identified problem. ▪ As appropriate, engage other staff members in the investigation to gain further insight into the problem. ▪ Discuss and summarise, in writing, what the team has collectively learned about the root cause and the problem of practice in preparation for work in Module 8.

Phase: Doing— What are we going to do about it?			
Module Title	PLCs will be able to:	Activities	Homework
Module 8: Brainstorming Initiatives	▪ Use the knowledge gained through research to identify initiatives to address the root cause. ▪ Identify "high impact" initiatives to implement in their school. ▪ Rate the feasibility of implementing these high impact initiatives.	▪ Brainstorming Possible Initiatives ▪ Rating Initiative's Potential for Success ▪ Feasibility of Implementation Checklist	▪ Consult with your school administration to gather feedback on the impact and feasibility of implementing the high impact, high feasibility initiatives identified by the team. ▪ Consult with the teachers and teaching teams who would work with the PLC Data Team to implement the strategy or initiative to gather their feedback. ▪ Meet as a PLC data team to discuss the feedback and to reach consensus on the strategies that you will move forward with. ▪ Using the Communications Organiser introduced in Module 1, craft a memo describing the proposed initiative and the rationale for its selection. Distribute the memo about the selected initiative and solicit any last minute feedback from the stakeholders.
Module 9: Developing Action Plans	▪ Understand the action planning process. ▪ Write measurable improvement targets. ▪ Develop an action plan for implementing the initiative.	▪ Action Planning Template ▪ Creating Measurable Improvement Targets ▪ Crafting Improvement Targets for the Action Plan	▪ Using the action plan template, construct an action plan to address the identified problem and its root cause.
Module 10: Monitoring Implementation	▪ Finalise the action plan for implementing your initiative ▪ Develop an Implementation Monitoring Plan	▪ Team Review of Draft Action Plan ▪ First Steps in Creating the Implementation Monitoring Plan	▪ Implement the action plan. ▪ Complete the Implementation Monitoring Plan. ▪ Begin to monitor implementation. ▪ Collect formative data as required by the implementation monitoring plan.

Phase: Evaluation – What results did we get?			
Module Title	PLCs will be able to:	Activities	Homework
Module 11: Preparing for Evaluation	▪ Understand programme evaluation. ▪ Develop an Evaluation Plan. ▪ Conduct a summative evaluation. ▪ Publish an evaluation report.	▪ The Evaluation Plan ▪ Evaluation Report	▪ Complete the Evaluation Plan ▪ Upon full implementation of the strategy, complete and publish the Evaluation Report

Appendices – optional materials to continue data use			
Module Title	PLCs will be able to:	Activities	Homework
Module 3 Additional Resources	▪ To identify a critical problem or issue in the school on which to focus your inquiry. ▪ To develop a discovery focusing question that will help the PLC accurately define and describe the problem or issue.	▪ Identifying Focusing and Clarifying Questions ▪ Types of Data Displays	
Module 12: Building a Data Use Improvement Plan	▪ Identify a significant limiting factor to effective data use in your school ▪ Develop a Data Use Improvement Plan to address the limiting factor	▪ Identifying Limiting Factors ▪ Limiting Factors: Root Cause Analysis ▪ Developing a Measurable Improvement Target ▪ Building a Data Use Improvement Plan	▪ Complete the Data Use Improvement Plan. ▪ Implement the plan. ▪ Monitor your progress through the development and use of an Implementation Monitoring Plan similar to that used to Module 10 to monitor your action plan.
Module 13: Moving Forward	▪ Apply the data inquiry process (Discovery, Diagnosis, Doing and Evaluation) in new situations	▪ Moving Forward	▪ Continue to apply the data inquiry process to inform decisions in your school.
Module 14: Building a Vision for Data Use	▪ Draft a vision to guide school-wide data use efforts	▪ Drafting a Vision for Data Use	▪ Share the vision statement with stakeholders in your school and solicit their feedback. ▪ As a PLC data team, analyse feedback and revise the vision statement as appropriate. ▪ Present the final vision statement to school leadership for adoption.

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Module 1: Getting Started

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Table of Contents

Icon Legend

Small icons are included in the overview of each section of the guidebook. Each icon serves as a visual cue to what the exercise will entail.

Independent Work	Group Work	Document Review	Template
			
This icon appears whenever PLC data team members are prompted to work as individuals.	This icon appears whenever PLC data team members will be working as a team.	This icon appears when groups will need to refer back to a previous document or resource.	This icon appears when the section includes a customisable template or worksheet for use by data teams.

Introduction

Module 1, as its name implies, is designed to "get you and your team started" on the path toward using data for the improvement of school and student performance. We will begin session 1 by setting norms or standards that will help your Professional Learning Community (PLC) data team run smoothly. We will then analyse your perceptions, and those of your faculty, about of the current state of data use in your school. This analysis will enable you to begin to identify strengths and weaknesses in your school's use of data. The session will close with the introduction of several tools that you will use to move your work forward prior to Module 2.

Preparation How do we organise for data use?	☐ Module 1: Getting Started ☐ Module 2: Data Literacy
Discovery What's the issue or problem?	☐ Module 3: Identifying a Problem ☐ Module 4: Evaluating Data
Diagnosis What's the root cause?	☐ Module 5: Analysing Discovery Data ☐ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module your PLC will be able to:

1. Describe the framework for data use.
2. Create norms to promote effective collaboration.
3. Analyse survey results to identify perceived strengths and weaknesses in the use of data in your school.
4. Use communication tools to help make the work of your PLC transparent to all stakeholders in your school community.
5. Use tools and strategies to organise for effective collaborative work.

Overview of Tools, Resources, and Examples

1.1 Norm Setting

This activity provides an opportunity for your PLC to develop consensus on the rules or standards that will govern your meetings and the way you do business.

1.2 Data Use Survey Analysis

This activity provides an opportunity for your PLC to analyse the faculty's aggregate perceptions of the current state of data use in your school and to reach consensus on general areas of strength and areas of need.

1.3 Communication Organiser Template

This template provides your PLC with a tool to help structure and organise important communications for schools and other stakeholders.

1.4 PLC Data Meeting Agenda Template

This template provides your PLC with an effective model for creating meeting agendas.

1.5 PLC Data Meeting Notes Template

This template provides your PLC with an effective model for capturing meeting notes.

1.1 Norm Setting

Optional

Overview
Objective Create norms to promote effective collaboration.
Purpose To provide an opportunity for your PLC to develop consensus on the rules or standards that will govern your meetings and the way you do business.
Description Each team member will write down rules or standards that they feel support the efficient and effective functioning of the PLC. Team members will then share their ideas and record those that every member can agree to follow and uphold. These will become the "norms" that guide your work. After the PLC reaches consensus, publish and frequently consult your team norms.
Time 20 minutes

Directions:

1. Individually, write down a short list of rules or standards that you feel all members of the PLC should abide by.
2. Taking turns around the group, share one of your suggested rules or standards. Your data coach will record these suggestions on chart paper.
3. Repeat this process until all team members have contributed all the items of their choosing.
4. Determine, as a group, if everyone can abide by the recorded rules or standards. Are there any that should be removed? Are there any that should be added?
5. Once your team has reached consensus, the data coach will publish the norms so that all PLC members can refer to them as necessary. Include the norms on all meeting agendas.

1.2 Data Use Survey Analysis

Obligatory

Overview
Objective Analyse survey results to identify perceived strengths and weaknesses in the use of data in your school.
Purpose To analyse the *aggregate* faculty perceptions about the current state of data use in your school and to reach consensus within your PLC on general areas of strength and areas of need.
Description Prior to the session each team member reviewed the Data Use Survey results aggregated across all school faculty members. During this activity, you will individually rank strengths and areas of need in broad categories, and then reconvene as a team to discuss your rankings and how they apply to your group's overall perception of data use within your school. Your team will then work together to identify three areas of strength and three areas of need.
Time 60 minutes

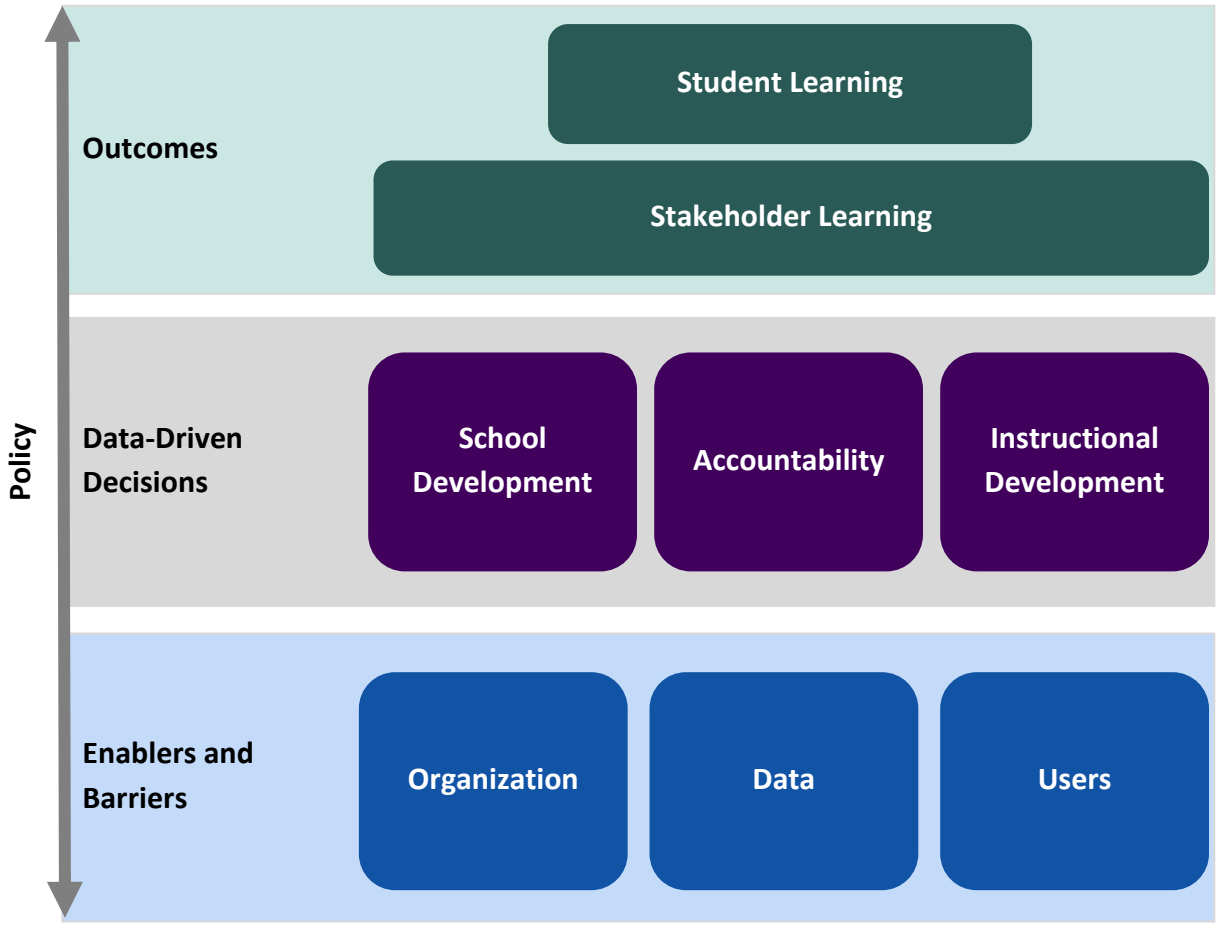


Definitions of terms in italics can be found in the course glossary.

Directions:

1. **Individual Work – Factual Observations (10 minutes)**
   a. Take a few minutes to refresh your memory of the Data Use Survey aggregate results that you reviewed prior to this session.
   b. Consider each category in the "PLC Data Use Survey Analysis" table—on the following page— in the context of the aggregate survey responses from your colleagues and your perception of whole school data use practices as described in the "Data Use Theory of Action" diagram, below.
   c. Using the PLC Data Use Survey Analysis table, below, and the appropriate color marker, indicate your perception of where each "characteristic" falls on the continuum from "Greatest Need" to "Greatest Strength."

Data Use Theory of Action



PLC Data Use Survey Analysis

		Greatest Strength			Greatest Need
Category	**Characteristic**	**1**	**2**	**3**	**4**
Organization Characteristics	School Leadership				
	School Cooperation				
	School vision and norms				
	School training and support				
Data Characteristics	Data accessibility				
	Data quality				
User Characteristics	User attitudes				
	User skills				
Data Use Characteristics	Using data for accountability				
	Using data for school				
	Using data for instruction				

2. Group Observations Sharing (20 minutes)

a. Take turns and report your observations about one of the characteristics in the table. Observations are facts or evidence that can be readily seen in the data and stated without interpretation. Use a sentence starter such as "I see…," "I observe…," or "I notice…," to keep the observations factual.

b. Through group discussion, reach consensus on the "colour" (red=need, green=strength) that the team believes should be assigned to each characteristic in the PLC Data Use Survey Analysis table. Your data coach will record your choices on a master table.

3. Group Work – Making Inferences from Observations (25 minutes)

a. *Inference* is the act of reasoning from the basis of factual observations (or evidence). Inferences are hypotheses that expand the factual observation into a possible conclusion.

b. Use the master PLC Data User Survey Analysis table that you just completed as a reference.

c. As a PLC, respond to each of the following discussion questions. Your data coach will record your inferences.
   - Out of the four categories, what is your highest area of need? When you think about your school, does this match your "gut" feeling? Why or why not?
   - Within your highest need category(ies), where, specifically, do you have the greatest need? Does this match your "gut" feeling? Why or why not?
   - Out of the four categories, where are your strengths? When you think about your school, does this match your "gut" feeling? Why or why not?
   - Within your highest strength category(ies), where, specifically, are you the strongest? Does this match your "gut" feeling? Why or why not?
   - Look across categories. What patterns do you see?
   - Looking across categories, do you see any possible cause and effect relationships (e.g., a need in one area that might be the cause of a need in another area)?

4. Summing Up (5 minutes)

Based on your collective analysis of the Data Use Survey results and your individual perceptions identify and record three "strong characteristics" and three "characteristics in need of improvement." Keep this information for use later in the course.

Strong Characteristics	Characteristics in Need of Improvement
1.	1.
2.	2.
3.	3.

1.3 Communication Organiser Template

Obligatory

Overview
Objective Use communication tools to help make the work of your PLC transparent to all stakeholders in your school community.
Purpose To improve communication.
Description Use this template as a model for organising and communicating important findings and messages.
Time About 15 minutes

Communication Organiser Template

Finding or message to be communicated:			
Audience (check all that apply):			
☐ Governing body	☐ School faculty/department	☐ Students	☐ Parents
☐ Other:			
What does the audience need to know? List items for each audience identified.			
Anticipated audience reaction:			
What would we like the audience to do with the information? List items for each audience identified.			
Mode of Communication (check all that apply):			
☐ Written report	☐ Website	☐ Email	☐ Presentation
☐ Data wall displays	☐ Informal communication	☐ Other:	

Communication timeline:	Person or team responsible for communication:

1.4 PLC Data Meeting Agenda Template

Obligatory

Overview
Objective Use tools and strategies to organise for effective collaborative work.
Purpose To improve meetings.
Description Use this template as a model for developing agendas for productive meetings.
Time About 10 minutes

PLC Data Meeting Agenda Template

School:	
Meeting Date:	

Agenda		
Item #	Subject	Presenter

Add additional rows as needed.

Resources	
Items/Resources to Bring to Meeting	Items/Resources to Be Distributed at Meeting

Add additional rows as needed.

PLC Norms
List all norms established and recorded by the team – this list should appear on all meeting agendas.

1.5 PLC Data Meeting Notes Template

Obligatory

Overview
Objective Use tools and strategies to organise for effective collaborative work.
Purpose To improve communication and increase team effectiveness.
Description To improve the effectiveness of quality communication, aim to accurately and efficiently capture what occurred during your meeting. This template serves as a model for documenting your meeting.
Time Throughout each meeting held.

PLC Data Meeting Notes Template

School:		
Meeting Date:		
Submitted by (name):		
Submitted date:		
Members present:	Name	Role

Agenda Item no:	
Subject:	
Discussion:	
Decisions/Action Steps:	
Person Responsible:	
Timeline:	

Insert rows for additional agenda items

Items for the next meeting agenda:	
Actions needed prior to next meeting:	

Wrap Up

Session 1 Summary

- You've set the stage for the year's study and work.
- You've set PLC data team norms and have tools to increase your efficiency.
- You've identified perceived data use strengths and areas of need in your school.
- You've organised a plan to communicate the results of the Data Use Survey and your general data work to stakeholders.

Next Steps

1. Develop an agenda for a meeting to be held prior to your next session.
2. Use the PLC Data Meeting Notes Template to record the results of the meeting.
3. Use the Communication Organiser Template to help develop and distribute communications on results of the Data Use Survey and your findings to the school community, and goals of the data use project to stakeholders.

Using Data for Improving School and Student Performance

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

Module 2: Data Literacy

Education and Culture DG

Lifelong Learning Programme

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Introduction

In Module 2 you will explore two important aspects of your data work: increasing your assessment and data literacy and identifying data currently available in your school. Then, in preparation for Module 3, you will be introduced to the concept of identifying a "good" issue to investigate as a Professional Learning Community (PLC) data team. As in Module 1, Module 2 uses activities, tools, resources, and examples to help you develop your ability to effectively use data to improve school and student performance.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☐ Module 2: Data Literacy
Discovery What's the issue or problem?	☐ Module 3: Identifying a Problem ☐ Module 4: Evaluating Data
Diagnosis What's the root cause?	☐ Module 5: Analysing Discovery Data ☐ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC will be able to:

1. Understand data use terms and concepts.
2. Describe the types of assessments used in your schools.
3. Collaboratively create a data inventory that documents all data available in your school.
4. Prepare to identify a significant student related issue to investigate

Overview of Tools, Resources, and Examples

2.1 Understanding Data Use Terms and Concepts

This activity provides PLCs with an opportunity to rate their individual understanding of common data use terms and concepts and then, as a group, confirm or improve their understanding.

2.2 Understanding Assessments Used in Your School

This activity provides PLCs with an opportunity to inventory and describe their school's various assessments and how they are used.

2.3 Creating an Inventory of Data in Your School

The Data Inventory Template provides a form to facilitate the identification and description of data elements currently available in the school, as well as those additional elements that PLCs may need to collect to support inquiry.

2.4 Asking the Right Questions

This resource provides PLCs with sample questions or school issues to investigate. The PLC will review these questions and issues in preparation for the identification of a significant issue in their school to investigate.

2.1 Understanding Data Use Terms and Concepts

Obligatory

Overview
Objective Understand data use terms and concepts.
Purpose To develop a shared understanding of common data use terminology and concepts.
Description In this activity, you will have the opportunity to rate your individual understanding of common data use terms and concepts and then, as a group, confirm or improve your understanding.
Time 30 minutes

Directions:

1. **Individual Rating – Common Data Use Terms and Concepts**
   Use the three-point rating scale, below, to assess your own level of understanding of the terminology and concepts listed in the left column of the Data Analysis Terms and Concepts table on the following page.
   - 3 — I have a solid understanding of this term and could explain it to someone else.
   - 2 — I have heard of this term, but could not explain it to someone else.
   - 1 — I have never heard of this term.

2. **Group Rating – Common Data Use Terms and Concepts**
   Compare your rating for each term or concept with the ratings of your Team. In the "Team Score Column" do one of the following:
   a. Put a tick (✔) next to any term or concept that everyone rated as a 3. Since all of your Team members have a solid understanding of these assessments, you won't spend additional time addressing these items.
   b. Put an asterisk (*) next to any term or concept with mixed ratings, but at least one "3."
   c. Put a question mark (?) next to any term or concept that no one has rated a 3.

3. If a term or concept is well understood by a few of your team members, but not all, have a member who rated their understanding as a "3" explain the concept to the group. For those terms or comments that were assigned a "?", use the Glossary of terms and concepts in the Appendix to build the Team's shared understanding. Make a note of any additional questions that you have regarding these terms or concepts. The Data Coach will lead a discussion to address these questions.

Data Analysis Terms and Concepts

Data Analysis Terms and Concepts	Your Rating	Team Score
Aggregation		
Average		
Causation		
Correlation		
Disaggregation		
Data types		
▪ Input data		
▪ Process data		
▪ Output data		
▪ Interview data		
▪ Survey data		
▪ Observational data		
▪ Assessment data		
Deviation		
Frequencies		
▪ Absolute frequency		
▪ Relative frequency		
Inference		
Mean		
Median		
Population		
Raw score		
Reliability		
Sample		
Scaled Score		
Standard Error of Measurement (SEM)		
Triangulation		
Validity		

2.2 Understanding Assessments Used in Your School

Obligatory

Overview
Objective Describe the types of assessments used in your schools.
Purpose To develop a shared understanding of the school's assessments.
Description You will list and describe all of the different types of assessments used in your school and determine if they are criterion referenced or normative measures. You will also describe how each assessment is used.
Time 30 minutes

Directions:

1. As a group, brainstorm the various types of assessments used in your school. The Data Coach will record the assessments on chart paper.
2. For each assessment, note the subject and level. Use "Section A: Assessments" of the Data Inventory template that appears on page 13 of this guidebook to record your discussion. Complete the first three columns of the template to identify the assessments used in your school.
3. As a Team, discuss the difference between *Criterion Referenced Tests (CRT)* and *Norm Referenced Tests (NRT)*. Consult the glossary if necessary for a description of these assessment types. Complete the fourth column of the template for each assessment.

Definitions of terms in italics can be found in the course glossary.

2.3 Creating an Inventory of Data in Your School

Obligatory

Overview
Objective Collaboratively create a data inventory that documents all data available in your school.
Purpose To provide an inventory of data that will serve as a reference point for future activities.
Description The Data Inventory Template provides a form to facilitate the identification and description of data elements currently available in your school, as well as those additional elements that your PLC may need to collect to support inquiry.
Time 10 minutes to introduce. Complete prior to the next session

Directions:

There are three sections to the Data Inventory Template found on the following pages: Assessments, Other Data Elements, and Additional Data Needed. Add additional rows to each section as necessary.

1. **Section A: Assessments**
   In Section A of the Data Inventory template, review the list of assessments that are administered across your school. Complete the last two columns of the table to rate the accessibility of the data and describe how the data is currently used. "Access" refers to

the degree to which the data is available to inform decisions. Rate access on a scale of 1 to 4 (1=easily accessible to 4 = hard to access). In the "Current Data Use" column, describe how the data is currently used to inform decisions.

2. **Section B: Other Data Elements**
   Use Section B to record all other major data elements (i.e. non-assessment data) that are collected in your school. Examples might include: demographics, surveys, curricular information, attendance, behaviour, etc.

3. **Section C: Identifying Additional Data Needed**
   Think about the kinds of educational issues that can be informed by data. Consult the data inventory captured in sections A and B of the template. Are there additional data elements that would be helpful to have that you don't currently collect? Document these additional data elements in Section C, as well as what needs to be done to obtain them.

Data Inventory: [School Name]

Section A: Assessments					
Assessment	Level (KS, levels)	Subject(s)	CRT or NRT	Access Rating 1-4	Current Data Use

Section B : Other Data Elements					
Data Element	Level/area	Content Area(s)	Date Data Available	Access Rating 1-4	Current Data Use

Section C: Additional Data Needed	
Data Elements Needed	Plan to acquire required data elements

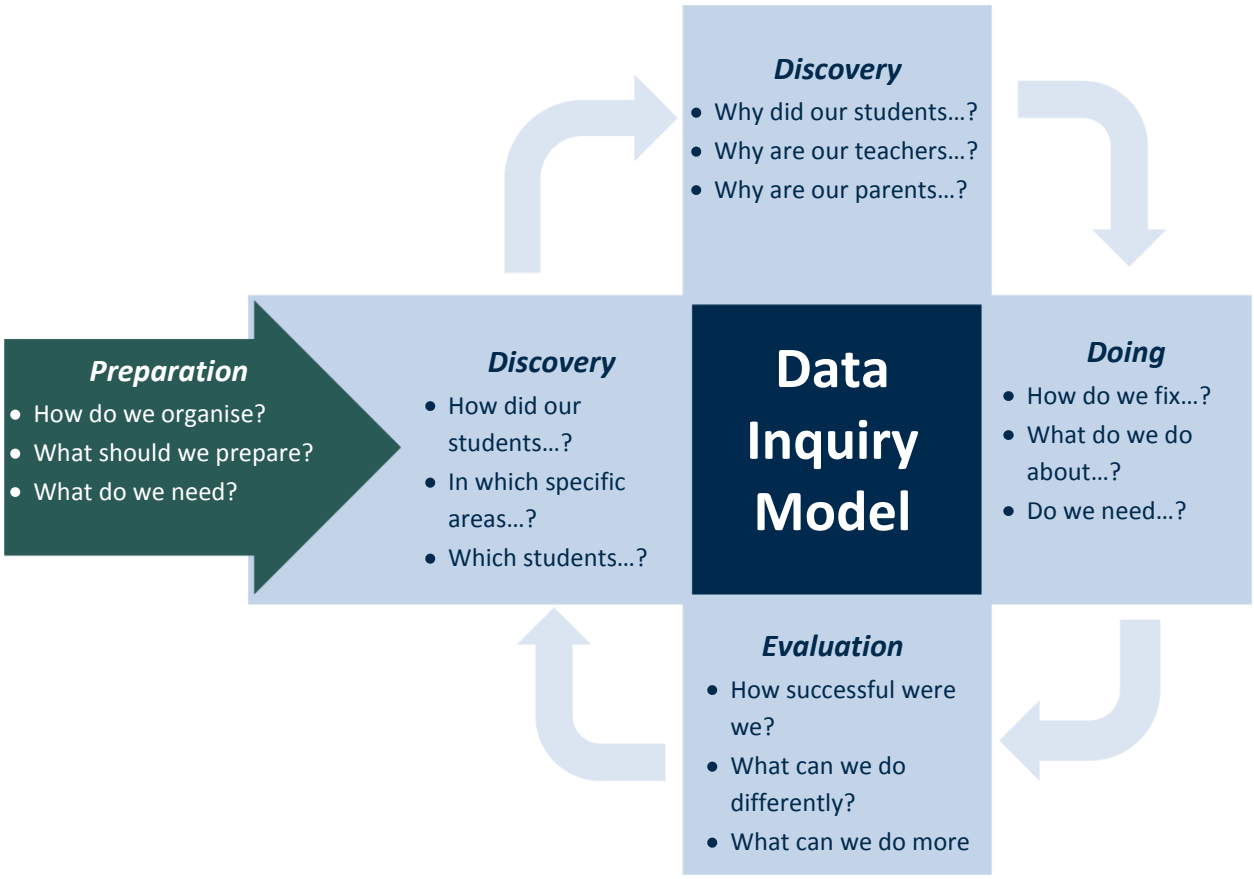
2.4 Asking the Right Questions

Obligatory

Overview
Objective Prepare to identify a significant student related issue to investigate
Purpose To get PLCs to start thinking about student related issues for investigation, in preparation for Module 3: Identifying the Problem.
Description This resource provides PLCs with sample questions or school issues to investigate. The PLC will review these questions and issues in preparation for the identification of a significant issue in their school to investigate.
Time About 15 minutes

It's important to begin the inquiry process with *discovery questions*. These are questions that help us identify the issue or problem that we are trying to address. Later in the process we will move on to diagnosis questions and doing questions, but we cannot effectively answer those types of questions without a very clear articulation of the problem. Consider the following examples of school issues and questions as your PLC thinks about an issue or problem to investigate in your school.

The Data Inquiry Model



Examples of Discovery questions grouped by issue:

Enrolment

- How do the student characteristics in my school compare with those in other schools?
- What are the characteristics of students within and across grade levels?

Incoming Students

- Do previous assessment results indicate the need for targeted intervention and instruction support at the beginning of Year 7?
- What are the characteristics of new students and how do they differ from previous groups?

Transfers

- What are the characteristics and performance of students who go elsewhere?
- Where are transfer students going?
- What is the distribution of mobility over the school year?

Attendance

- What are the characteristics of students who have the highest and lowest absence rates?
- What is the relationship between school absence and performance in tests and examinations?

Engagement

- What are the characteristics and performance of students who do not complete KS4 or who do not continue in education post-16?
- What subgroups of students have the highest percentage of not completing KS4 or not continuing in education post-16?

Special Educational Needs

- Is there over-representation in the special educational needs population by gender or race/ethnicity?
- Is there over-representation in any disability category or subject?
- Which special educational needs services/interventions are improving student performance and reducing the percentage of students performing at the lowest levels?

Subject choices

- What are the subject choice selection patterns of subgroups of students?
- What are subject failure rates across subgroups of students?

Assessment Performance

- Are performance gaps between various subgroups decreasing over time?
- What differences do we see in performance as students move through the school?
- In which areas do we need to improve teaching and learning?

Assessment Performance across Subjects

- What is the relationship between students' reading proficiency and their performance in maths and science?
- Does the apparent impact of reading on maths and science performance differ across subgroups?

End of Key Stage 4

- What are the characteristics and performance of students who achieve 5+ A*-C
- What proportion of our Year 11 students have been in the school for four years, three years, two years, one year or less than one year?
- What percentage of students are older than 16 at the end of KS4?
- What were the KS2 scores of students who didn't achieve 5+ A*-C?

Wrap Up

Session 2 Summary

- Established a shared understanding of data use terms and concepts
- Increased our knowledge of the assessments currently in use in the school.
- Began to create an inventory of the data that is available, or should be available, in our school.
- Set the stage to identify "good" issues or problems that we would like to investigate.

Next Steps

1. Individually, review the examples in "Activity 2.4 – Asking the Right Questions" to begin to identify issues for investigation.
2. Meet as a team to identify several student-related issues or problems to investigate and bring your issues or problems to our next session for refinement. (Remember to develop an agenda and record meeting minutes any time the team meets!)
3. Continue to develop your data inventory. Bring the completed inventory to the next session.

Using Data for Improving School and Student Performance

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

Module 3: Identifying a Problem

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Introduction

Modules 1 and 2 introduced you to the inquiry process, improved your data literacy, and encouraged you to think, as a Professional Learning Community (PLC) data team, about issues in your school that you would like to investigate. In Module 3 you will learn more about the types of questions that can guide your inquiry process, and identify ways to effectively display data. The data inventory that you completed prior to this session will help you to identify the data source and data display that will help you to address your focusing question.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☐ Module 3: Identifying a Problem ☐ Module 4: Evaluating Data
Diagnosis What's the root cause?	☐ Module 5: Analysing Discovery Data ☐ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC will be able to:

1. Identify a critical problem or issue in the school on which to focus your inquiry.
2. Develop a discovery focusing question that will help the PLC accurately define and describe the problem or issue.
3. Identify data elements and sources that will help inform the discovery process.
4. Recognise high quality data and describe the characteristics of a good data display.

Overview of Tools, Resources, and Examples

3.1 Focusing Question Formulation

Through use of brainstorming techniques, the question formulation activity will help your PLC data team develop, organize, and prioritise questions to guide the inquiry process

3.2 Identifying and Locating Data Sources

This tool provides a way to record your questions and catalogue the sources of data needed to answer them.

3.1 Focusing Question Formulation

Obligatory

Overview
Objective ▪ Identify a critical problem or issue in the school on which to focus your inquiry. ▪ Develop a discovery focusing question that will help the PLC accurately define and describe the problem or issue.
Purpose To work from a broad starting point to develop a question that will focus the inquiry.
Description Through the use of brainstorming techniques, the question formulation activity will help your PLC data team to develop, organize and prioritise questions that guide the inquiry process.
Time About 30 minutes

Directions:

1. Based on your experience and the information obtained in the previous session's section "Asking the Right Questions," identify an issue in your school that your PLC data team would like to try to address. The issue should be focused on your students and should be something that is within the school's control to change or impact. Write the issue on the top of a piece of chart paper. It can be formulated as either a statement or question.

2. As a group, brainstorm questions that stem from the original question/statement. Capture these questions on chart paper. All items should be phrased as questions and related to the discovery stage of the inquiry process. Circle your top three priority questions. From these three, choose the highest priority question. This question will guide the initial stage of your inquiry.
3. The data coach will record this question on a new sheet of chart paper for use in Activity 3.2.

3.2 Identifying and Locating Data Sources

Obligatory

Overview
Objective Identify data elements and sources that will help inform the discovery process.
Purpose To identify the source of the data needed to answer the focusing question developed in the question formulation activity (3.1).
Description Using the focusing question identified in the previous activity, the PLC data team will use the data inventory created in session 2—as well as personal knowledge—to collaboratively identify data elements needed to support their inquiry and the sources of those data elements.
Time About 15 minutes

Directions:

1. Record the focusing question that you wrote on the chart paper in the Question Formulation Activity that you just completed in the Identifying and Locating Data Sources template on the following page.
2. As a PLC, brainstorm the data elements needed to address the focusing question. Record your ideas on the chart paper below the focusing question.
3. Reach consensus on data elements needed to address the focusing question and record them in the Identifying and Locating Data Sources template.

4. As a team, decide on the owner/location for each of the data elements. Record the information in the template.
5. Determine and record when the data will be collected and who will be responsible for the collection in the last column.

Identifying and Locating Data Sources Template

Focusing Question		
Data Element (*eg* assessment results)	Owner/Location	Collected by Whom and by When?

Wrap Up

Session 3 Summary

- You identified a critical problem or issue in the school on which to focus your inquiry.
- You articulated a focusing question that will guide your inquiry.
- You identified data elements and sources that will help inform the discovery process.
- We discussed the characteristics of a good data display.

Next Steps

1. Using the data inventory you created in Module 2 and the information that you generated in Activity 3.2, collect data related to your focusing question.
2. Build data displays prior to the next session that "tell a story" about what the data say about your focusing question.

Using Data for Improving School and Student Performance

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Module 4: Evaluating Data

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Introduction

Modules 1 and 2 introduced the inquiry process, built your assessment literacy, and started you thinking, as a Professional Learning Community (PLC) data team, about issues in your school that you would like to investigate. In Module 3, you learned more about the types of questions that can guide your inquiry process and how to recognise and effectively display "quality data." In Module 4, you will assess the quality of the final set of data you collected as well as the data displays created from the data set.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☐ Module 4: Evaluating Data
Diagnosis What's the root cause?	☐ Module 5: Analysing Discovery Data ☐ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC data team will be able to:

1. Evaluate the quality of collected data.
2. Critique your data displays.
3. Plan for improvements.

Overview of Tools, Resources, and Examples

4.1 Assessing Data Quality

This activity will enable the PLC data team, as a group, to assess the quality of the final data set.

4.2 Assessing Data Display Quality

Through this activity, the PLC data team will review the characteristics of the data displays that they have generated and compare their work to the attributes and examples of high quality data displays.

4.1 Assessing Data Quality

Obligatory

Overview
Objective Evaluate the quality of collected data
Purpose To rate the quality of your PLC's final data set against the attributes of quality data.
Description Your PLC will use the Data Quality Checklist to evaluate the quality of the final data set and provide evidence to support that rating.
Time About 30 minutes

Directions:

1. As a PLC data team, review the data set that you collected in light of each of the attributes in the Data Quality Checklist on the following page. Not every attribute will apply to your data set.
2. Briefly state the evidence that supports those attributes for which you marked "yes" ratings.
3. Repeat this process for each data element in the data set (*eg* population data, performance data).

Data Quality Checklist

Are the Data:	Yes/No	Evidence of Quality (How do you know?)
Valid measures		
Reliable measures		
One of multiple measures (triangulation of data)		
Representative sample		
"Fresh"- timely		
Accurate		
Complete		
Related to focusing question		
Other attributes:		

Insert rows for additional data elements as needed.

4.2 – Assessing Data Display Quality

Optional

Overview
Objective Critique your data displays
Purpose To critique the quality of the data displays generated to address the PLC's focusing question.
Description Through this activity, the PLC data team will review the characteristics of the data displays that they have generated and compare their work to the attributes and examples of high quality data displays.
Time About 45 minutes



Directions:

1. **Individual Work (10 minutes)**
   a. Review the data set(s) and, on the template, record factual observations about what the data says.
   b. Review the data display(s) that your PLC crafted to tell a story about the data set.
   c. Complete the Data Display Template (on page 11) for the display(s). Use one template for each display.

2. **Group Work (35 minutes)**

   a. One at a time, share your factual observations.
   b. Reach consensus on the "story" that should be told about the data set.
   c. Share your rating for each of the "Data Quality Criteria" items. The Data Coach will record each team member's ratings and calculate the average across the team for each item.
   d. Take turns sharing your responses to each of the open-ended questions in the rubric.
   e. Reach consensus on the overall quality of the display and any changes that should be made to the display(s). Assign one or two team members to make the changes prior to the next PLC data team meeting.

Data Display Template

Focusing question driving the data display:
Factual observations about “what the data says”:

Data Display Quality Rating			
Use the scale provided below to rate the data display against the Display Quality Criteria. *1 = Excellent: No change needed; 2 = Good: Some changes needed; 3 = OK: Moderate changes needed; 4 = Not So Good: Needs extensive rework*			
	Data Quality Criteria	Rating	Comments
1	The data display contains attributes of a "good chart" *eg* all axes are labelled; display includes an informative title; population is identified; number and percentage of students; variables identified; dates for data points; key to symbols, etc.		

2	The data display is uncluttered and free of unnecessary detail and extraneous features.		
3	The data display uses an appropriate choice of chart style (*eg* pie chart, clustered bar chart, stacked bar chart, etc.).		

Answer the following questions with an open response:

- Does this display tell the "story" that the PLC data team wants told?

- What do you like about this data display?

- Is there anything that makes it difficult to understand?

- What are some concrete suggestions that could make this display more effective or easier to understand?

Wrap Up

Session 4 Summary

- You've evaluated the quality of your collected data.
- You've critiqued the quality of your data displays.
- You've planned for any improvements

Next Steps

1. Use the information generated in activities 4.1 and 4.2 to make improvements to your data set and data display.

Using Data for Improving School and Student Performance

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Module 5: Analysing Discovery Data

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Introduction

In Module 4, the team evaluated data related to their focusing question. In this module, you will be introduced to the Collaborative Data Analysis Process, a model that you will use to analyse the collected data. An objective, factual review of the data presented in the data displays will result in inferences about the focusing question and will lead to the development of a clear statement of the problem to be addressed. You will revisit the Question Formulation Activity to craft clarifying questions, if necessary, to further refine the problem statement. You will then develop a plan to gather, display and analyse any additional data needed to address the clarifying questions and refine the problem statement in preparation for Module 6.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
Diagnosis What's the root cause?	☐ Module 5: Analysing Discovery Data ☐ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module your PLC will be able to:

1. Apply the collaborative data analysis process.
2. Make factual observations from data sets and displays.
3. Form inferences from factual observations of the discovery data.
4. Articulate a clear, evidence-based statement of the problem.
5. Formulate clarifying questions to refine the problem.
6. Identify additional data needed to answer the clarifying questions.
7. Develop a plan for the collection, display and analysis of the additional data sets.

Overview of Tools, Resources, and Examples

5.1 Data Analysis

Each PLC data team member will spend several minutes reviewing the data set(s)/data display(s) and making factual observations about what the data says. The team will then record all observations on chart paper and work to reach consensus on valid, objective observations that arise from the data set. These observations will then be used by the team to create inferences about the focusing question which will lead to the clear statement of an evidence-based problem.

5.2 Problem Statement Worksheet

The PLC data team will collaboratively complete the Problem Statement Worksheet. As the worksheet guides the team through the process, the team will gain a deeper understanding of the problem and its impact.

5.3 Clarifying Question Formulation

Similar to the Focusing Question Formulation activity (3.1), this activity encourages PLC data teams to use brainstorming techniques to collaboratively identify additional questions, if necessary, which will help them ensure that the problem statement is based on sound evidence.

5.4 Identifying and Locating Data Sources

The PLC data team will use their data inventory to collaboratively identify additional data, if needed, to refine the problem statement. The team will then develop a plan to collect, display, and analyse the data.

5.1 Data Analysis

Obligatory

Overview
Objective PLCs will be able to apply the collaborative data analysis process. PLCs will be able to make factual observations from data sets and displays. PLCs will be able to form inferences from factual observations of the discovery data.
Purpose To make factual observations about what the data "says" with regard to the focusing question and to form inferences based on these observations.
Description Each PLC data team member will spend several minutes reviewing the data set/data displays and making observations about what the data says. The team will then record all observations on chart paper and work to reach consensus on valid, objective observations that arise from the data set. These observations will then be used by the team to create inferences about the focusing question which will lead to the clear statement of an evidence-based problem.
Time 30 minutes

Directions:

1. Record the focusing question that you are investigating on the Data Analysis Worksheet. The data coach will record it on chart paper.
2. Observe.
   a. Using the data set(s) and display(s) that you evaluated in Module 4, take turns making factual observations about "what the data says." The data coach will

record your observations under the focusing question on the chart paper. When expressing your observation you might use sentence starters such as: "I see…," "I observe…," and "I notice…" Stay away from making inferences. Discuss ONLY the facts at this stage of the process. If you catch yourself using the terms "however," "because," or "therefore," STOP and return to the sentence starters suggested above. It is OK to make observations that are based on the observations made by other team members.

b. The following questions will help you probe for deeper analysis:
    - How do the data sets compare to each other?
    - What are the commonalities among a given data set?
    - What patterns or similarities are evident across different data sets?
    - What inconsistencies or discrepancies (if any) are evident?
    - What is not represented in the data?
    - What questions does the data raise?

c. The data coach will record your observations under the focusing question on the chart paper. You should record the observations on your Data Analysis Worksheet.

3. Interpret or make inferences from factual observations.
    a. When all observations have been made, review them as a team. Code or group the observations into categories of findings. Think about the following questions while organising the observations.
        - What assumptions might be underneath what you are noticing in the data?
        - What clues help explain why a certain population is meeting or missing targets?
        - What areas in the data stand out as needing further explanation?
        - What patterns or themes do you see in the observations?
        - Which of these observations are most relevant and important to your inquiry?
    b. As a team, review the categorised findings. Make a list of what the team can now infer about the focusing question. The data coach will record the list on chart paper. When the list is complete, record "what the team can infer" on the Data Analysis Worksheet.
    c. The inferences made by the team will help clearly identify the problem to be addressed.

Data Analysis Worksheet

Focusing Question:
Observations (Without judgment, what do you see?):
Inferences (What can the team now infer about the focusing question?):

5.2 Problem Statement Worksheet

Obligatory

Overview
Objective PLCs will be able to articulate a clear, evidence-based statement of the problem.
Purpose To clearly define the problem and to prepare to diagnose the root cause of the issue in Module 6.
Description The PLC data team will collaboratively complete the Problem Statement Worksheet. As the worksheet guides the team through the process, the team will gain a deeper understanding of the problem and its impact.
Time 30 minutes

Directions:

1. Page 12 contains a completed sample of the Problem Statement Worksheet. When using the worksheet, start by stating the original issue being investigated in the first box. Then, work through the boxes from top to bottom to craft the final statement by identifying:
   - the people affected
   - what the data says about the discovery questions
   - the inferences generated from what the data says.
2. Use a blank copy of the worksheet, found on page 13, to complete this activity for your PLC's problem statement.

3. Once the final problem statement has been crafted it may be obvious that additional data needs to be collected and analysed to move the inquiry forward. If that is the case, use Activities 5.3 and 5.4 to identify the clarifying questions and the data needed to address them. Use the data evaluation checklist presented in Module 4 to assess the quality of your data set.

4. Use the Data Analysis Activity, 5.1, to analyse the new data. Adjust the final problem statement, if necessary, after you complete the analysis.

Sample Problem Statement Worksheet

Initial broad issue	Students appear to be unprepared to meet the challenges of the secondary mathematics curriculum.
Focusing question	What is the mathematics performance level of students entering secondary school?
Population impacted by the issue	Students entering secondary school
What does the data say about the focusing question?	▪ The majority of new Year 7 students are performing below the expected level in mathematics. ▪ Students are particularly weak in the solution of word problems although they demonstrate mastery of the computation skills in a non-verbal context. ▪ This is particularly true for boys and and students with special educational needs..
Inference regarding this population's learning problem?	▪ Students have difficulty reading word problems. ▪ Students have adequate computational skills. ▪ Students haven't mastered problem-solving techniques. ▪ Reading skills are necessary for success in solving word problems in maths.
Final problem statement	Students who have adequate computational skills but lack proficiency in reading perform below the expected level in mathematics.

Problem Statement Worksheet

Initial broad issue	
Focusing question	
Population impacted by the issue	
What does the data say about the focusing question?	
Inference regarding this population's learning problem?	
Final problem statement	

5.3 Clarifying Question Formulation

Optional

Overview
Objective PLCs will be able to formulate clarifying questions to refine the problem statement.
Purpose To review the evidence-based problem statement and formulate clarifying questions to further refine the problem statement, if necessary.
Description This activity should be used if the PLC data team has determined that additional analysis is necessary to refine their problem statement. Similar to the Focusing Question Formulation activity (3.1), this activity encourages PLC data teams to use brainstorming techniques to collaboratively identify additional questions that will help them ensure that the problem statement is based on sound evidence.
Time 5 minutes to introduce. To be completed, if necessary, before Session 6.

Directions:

1. Brainstorm questions that must be answered to ensure that the team has crafted a succinct problem statement that is based on sound evidence. Your data coach will record these questions on chart paper.
2. From this group of questions, identify the questions that must be answered before hypothesising the root cause of the identified problem. Record them on a new sheet of chart paper

Next steps:

- Can these questions be answered using the data set that you've already collected? If so, create data displays that address the questions using the existing data.
- If the existing data set can't be used to address a question, move on to "5.4- Identifying and Locating Data Sources."
- Once the data has been collected, use the Data Evaluation Checklist presented in Module 4 to assess the quality of your data set and Activity 5.2 to guide the analysis of the new data. A Data Analysis Worksheet template is included on the next page for use in this process.

Definitions of terms in italics can be found in the glossary.

Data Analysis Worksheet

Focusing Question:
Clarifying Questions:
Observations–What do you see (without judgement)?
Interpretation – inferences that have an impact on the problem statement

5.4 Identifying and Locating Data Sources Activity

Optional

Overview
Objective PLCs will be able to identify gaps where additional data is needed. PLCs will be able to develop a plan for the collection and display of the additional data sets.
Purpose To identify and locate additional data to refine the problem statement.
Description This activity complements activity 5.3 if the team has elected to use it to refine the problem statement. The PLC data team will identify and use their data inventory to locate additional data needed to refine the problem statement. The team will then develop a plan to collect, display and analyse the data.
Time 5 minutes to introduce. To be completed, if necessary, prior to Session 6.



Directions:

1. Individual Work (5 minutes) - Use the "Digging into Data Template"
   a. Record the initial, major issue that you identified to start your inquiry.
   b. List the problem statement crafted by the team.
   c. List each of the additional questions that must be answered to refine the problem statement.

2. Group Work (25 minutes) - Use the Digging into Data Template
    a. For each clarifying question, brainstorm the data elements needed to address the question. Reach consensus on the elements to be collected and record them on the Digging into Data Template on the following page.
    b. As a PLC, develop a plan for collecting, displaying, and analysing the data for each clarifying question. Record your plan, including who will be responsible for task completion, in the template.

Digging into Data Template: Clarifying Questions

Issue or Problem that Started the Inquiry:

Problem Statement:

Clarifying Questions	Data Sources	Target Date for Collection	Display Construction Plan	Date for Data Analysis	Person/Group Responsible

Wrap Up

Session 5 Summary

- You learned about the collaborative data analysis process.
- You used the process to analyse data related to your focusing question.
- You formed inferences from factual observations.
- You crafted an evidence-based problem statement
- You prepared to formulate clarifying questions to refine the problem statement.
- You prepared to identify additional data elements needed to address the clarifying questions.
- You learned how to develop a plan for the collection, display and analysis of the additional data.

Next Steps

1. Determine if your PLC has a quality problem statement.
2. If it is determined that your problem statement needs to be refined, complete activities 5.3 – Clarifying Question Formulation and 5.4 - Identifying and Locating Data Sources.
3. Collect the data necessary to address your PLC's clarifying questions.
4. Generate high-quality data displays to communicate what the data says about each of your clarifying questions.

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Module 6: Hypothesising Root Causes

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Introduction

In Module 5, you analysed the discovery data that you collected and posed an evidence-based problem to be investigated. If necessary, you crafted clarifying questions and collected data to ensure that your problem statement was evidence based. Your team is now ready to move deeper into the diagnosis stage of the process by hypothesising the root cause of the identified problem. Once you've hypothesised the root cause, you will be ready to collect and analyse related data in Module 7 to confirm the root cause.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
Diagnosis What's the root cause?	☑ Module 5: Analysing Discovery Data ☐ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC will be able to:

1. Refine the evidence-based problem, if necessary, based on any clarifying questions.
2. Hypothesise the root cause of your problem.
3. Identify additional data needed to confirm the hypothesised root cause.

Overview of Tools, Resources, and Examples

6.1 Refining Evidence-based Problem Statement

Prior to Session 6, the PLC data team may have posed clarifying questions to refine the problem statement. If so, they will have used Activities 5.3 and 5.4 to formulate clarifying questions and identify additional data sources. Upon completion of the analysis, the team will have modified the problem statement as necessary. This activity will help to review and finalise the new problem statement.

6.2 Why? Why? Why? Activity

Through successive answers to the question "why?" the PLC data team will reach consensus on the likely root cause of the problem under investigation.

6.3 Identifying Root Cause Data Activity

Using a template similar to that used in Module 4, the PLC data team will identify and plan to collect and display the data elements needed to test the root cause hypothesis.

6.4 Building Your Knowledge Base

Through this activity, your PLC data team will identify research and literature on the practice, helping you to learn more about the root cause and possible ways to address the problem of practice.

6.5 Consult Your Colleagues Worksheet

Your PLC data team will use the Consult Your Colleagues Worksheet to help you identify staff who are familiar with the problems and who may be able to suggest ways to address them. You will then plan and assign responsibilities for gathering information from your colleagues to share with the team.

6.1 Refining Evidence-based Problem Statement

Optional

Overview
Objective PLCs will be able to refine the problem statement, if necessary, based on any clarifying questions.
Purpose If the PLC found it necessary to craft clarifying questions to refine their problem statement they will have analysed the data to infer the impact on the problem statement.
Description Prior to Session 6, the PLC data team may have posed clarifying questions to refine the problem statement. If so, they will have used Activities 5.3 and 5.4 to formulate clarifying questions and identify additional data sources. Upon completion of the analysis, the team will have modified the problem statement as necessary. This activity will help to review and finalise the new problem statement.
Time 30 minutes

Directions:

1. This activity will only be used if the PLC Data Team crafted clarifying questions to help them refine their evidence-based problem statement. Remember to use the data evaluation checklist presented in Module 4 to assess the quality of your data set.
2. Use Activity 5.1- Data Analysis to guide your work.
3. If the inferences that you made from the data indicate a need for clarification, modify the evidence-based problem statement.

Data Analysis Worksheet

Focusing Question:
Clarifying Questions:
Observations (Without judgement, what do you see?):
Interpretation - inferences that impact the problem statement:

6.2 Why? Why? Why? Activity

Obligatory

Overview
Objective PLCs will be able to hypothesise the root cause of your problem.
Purpose To brainstorm hypotheses and identify a tentative root cause of the problem.
Description This activity is a relatively quick, informal way to identify root causes of problems. Through successive answers to the questions "why?" the PLC data team will reach consensus on the likely root cause of the problem under investigation.
Time 45 minutes

Identifying **Root Causes** in education rarely results in a single "fault" being identified that can easily be resolved. Protocols such as this one help a group of educators collaboratively discuss the most likely root causes to student achievement and other problems. This discussion will help you come to agreement about what is the most significant factor within the PLC's control to address.

Directions:

1. The data coach will start by writing the evidence-based problem developed in Module 5 on chart paper.
2. Each member of the team will then write one or more responses to the question: "why might this be happening?" Each response should be written on a separate sticky note.

3. Place the sticky notes in a row across the chart paper under the problem. Discuss the responses and eliminate any that duplicate the same basic idea. Add any that appear to be missing.
4. Rank-order the ideas from most plausible causes to least plausible. As you do this, think about factors that are under the school's control and which, if addressed, will solve the identified problem.
5. For the most plausible reason, again, write possible explanations of why this is happening on sticky notes. Place these in a row below the most plausible cause. You can revisit the other reasons later.
6. Again, rank-order the causes. Review all of the causes that you have associated with the initial, most plausible cause, and reach consensus on what the team believes to be the most likely root cause.

Definitions of terms in italics can be found in the glossary.

6.3 Identifying Root Cause Data Activity

Obligatory

Overview
Objective PLCs will be able to Identify additional data needed to confirm the hypothesised root cause.
Purpose To identify, collect and display data needed to test the root cause hypothesis.
Description Using a template similar to that used in Module 4, the PLC data team will identify and plan to collect and display the data elements needed to test the root cause hypothesis.
Time 10 minutes

If the previous activity resulted in more than one root cause being identified, this activity may be repeated to investigate each root cause.

Directions:

1. The Identifying Root Cause Data Template on the following page will help the team identify additional data needed to test the hypothesised root cause and plan for the collection and display of the data.
2. Using the template, capture the initial issue identified at the beginning of your inquiry and the evidenced-based problem that you are investigating.
3. Underneath the evidence-based problem, capture the hypothesised root cause.
4. As a PLC data team, brainstorm additional data elements necessary to test the hypothesis.
5. For each identified data element, reach agreement on a plan to collect and display this data.

Identifying Root Cause Data Template

Issue or problem that started the inquiry:

Evidence-based problem:

Hypothesised root cause to be tested:

Data elements needed:	Target date for collection	Display construction plan:	Person/group responsible:

6.4 Building Your Knowledge Base

Optional

Overview
Objective PLCs will be able to collect research and best practice examples on ways to address the root cause of the problem.
Purpose To provide resources that the PLC data team may use to gain knowledge about the root cause.
Description This section provides a listing of research and practice literature websites to help your PLC data team locate information that will build your knowledge base. This list can serve as a starting place for gathering research reports related to the problem your PLC data team is addressing and the interventions your team may consider.
Time Prior to session 7

Directions:

1. Each team member should select the root cause or one of the problems of practice to research.
2. The DATAUSE project website (www.datauseproject.eu) is a good source for literature on a wide range of issues in education that can help you gain a deeper understanding of your selected research topic.
3. Prior to Session 7, meet with your PLC data team to discuss each person's findings.
4. Summarise, in writing, your findings and bring them to Session 7. You might find it helpful to use the outline below to guide your research.

Summarising Research

Problem being investigated:
Specific questions to be answered by research:
1. 2. 3.
Research source consulted:
Findings regarding our questions:
1. 2. 3.

6.5 Consult Your Colleagues Worksheet

Optional

Overview
Objective PLCs will be able to identify staff, outside the PLC data team, who may provide insight into ways to address the root cause of the problem.
Purpose To take advantage of the local knowledge and build networks among colleagues related to the learner-centred problem under investigation.
Description Your PLC data team will use the Consult Your Colleagues Worksheet to help you identify staff who are familiar with the problems and who may be able to suggest ways to address them. They will then plan and assign responsibilities for gathering information from their colleagues to share with the team.
Time Prior to session 7

Directions:

1. Record the root cause and problem(s) of practice that you have identified on the Consult Your Colleagues Worksheet.
5. As a team, brainstorm individual or groups of colleagues who may be familiar with the root cause or the problem(s) of practice. The data coach will record your ideas on chart paper.
6. As a team, work to develop a list of colleagues to contact in attempts to gain their insight into your inquiry. Record their names in the appropriate cell in the worksheet.

7. For each colleague, record as much information as possible in the worksheet. The categories in the worksheet are just a start; add more information in the “comment” section of the worksheet.
8. As a group, assign team members to contact each colleague and gather information to be shared with the team.
9. Organise a team discussion where members share their findings. Summarise the findings in writing and bring this summary to Session 7.

Consult Your Colleagues Worksheet

Root cause statement:					
Colleague's name	School	Email	Phone	It is important to consult with this colleague because…	Additional comments
Problem of practice statement:					
Colleague's name	School	Email	Phone	It is important to consult with this colleague because…	Additional comments

Wrap Up

Session 6 Summary

- You discussed the analysis of additional data gathered to address any clarifying questions and how you refined the evidence-based statement of the problem.
- You worked as a PLC to hypothesise a root cause for the identified problem.
- You critiqued the root cause hypothesis and began to plan for the collection of additional data to refine and confirm your root cause hypothesis.

Next Steps

1. Using the Identifying Root Cause Data Template, collect and display any additional data needed to test your root cause hypothesis.

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Module 7: Analysing Root Cause Data

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Introduction

In Module 7, you will analyse the additional data that you collected and use your analysis skills to refine the root cause hypothesis generated in Module 6. You will then identify what needs to be addressed in order to appropriately solve the problem. You will also plan to build your knowledge base about the root cause in preparation for identifying possible ways to address these problems in Module 8.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
Diagnosis What's the root cause?	☑ Module 5: Analysing Discovery Data ☑ Module 6: Hypothesising Root Causes ☐ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module your PLC will be able to:

1. Confirm the root cause of the identified problem
2. Collect research and best practice examples on ways to address the root cause of the problem.
3. Identify staff, outside the PLC data team, who may provide insight into ways to address the root cause of the problem.

Overview of Tools, Resources and Examples

7.1 Root Cause Data Analysis

Each PLC data team member will spend several minutes reviewing the data set and making observations about what the data says. After recording each person's observations on chart paper, the team will reach consensus on valid, objective observations that arise from the data set. The team will then determine if the root cause hypothesis is supported and will craft the final root cause statement.

7.2 Identifying Problems of Practice

The PLC data team will collaboratively complete the Problem of Practice Worksheet. As the worksheet guides your team through the process, you will gain a deeper understanding of the problem of practice related to the root cause and will be able to craft a succinct statement of the problem(s).

7.3 Building Your Knowledge Base

Through this activity, your PLC data team will identify research and literature on the practice, helping you to learn more about the root cause and possible ways to address the problem of practice.

7.4 Consult Your Colleagues Worksheet

Your PLC data team will use the Consult Your Colleagues Worksheet to help you identify staff who are familiar with the problems and who may be able to suggest ways to address them. You will then plan and assign responsibilities for gathering information from your colleagues and sharing with your team.

7.1 Root Cause Data Analysis

Obligatory

Overview
Objective PLCs will be able to confirm the root cause of the identified problem
Purpose To make factual observations about what the data "says" regarding the hypothesised root cause.
Description Each PLC data team member will spend several minutes reviewing the data set/data displays and making observations about what the data say. After recording each person's observations on chart paper, the team will reach consensus on valid, objective observations that arise from the data set. The team will then determine if the root cause hypothesis is supported and will craft the final root cause statement.
Time 30 minutes

Directions:

1. Record the root cause hypothesis that you are investigating on the Root Cause Data Analysis Worksheet. The data coach will record the hypothesis on chart paper.
2. Use the Data Quality Checklist presented in Module 4 to assess the quality of your data set that you prepared after Session 6.

3. Take turns making factual observations about what the data say. Refrain from making inferences. The data coach will record your observations under the root cause hypothesis on chart paper.

4. Review all the observations as a team. Reach consensus on those that are valid, factual observations.

5. Answer the following questions:
   - Do the new observations support the root cause hypothesis?
   - Does the root cause need to be refined? If so, refine the statement.

6. As a team, reach consensus on the final root cause statement and record it on the Root Cause Data Analysis Worksheet.

Root Cause Data Analysis Worksheet

Root Cause Hypothesis:
Observations (What do you see without judgement?):
Final Root Cause Statement:

7.2 Identifying Problems of Practice

Obligatory

Overview
Objective PLCs will be able to confirm the root cause of the identified problem.
Purpose To reach consensus on school-based practices that contribute to the root cause.
Description The PLC data team will collaboratively complete the Problem of Practice Worksheet. As the worksheet guides your team through the process, you will gain a deeper understanding of the practices that are related to the root cause.
Time 30 minutes

Directions:

1. Page 12 contains a completed Sample Problem of Practice Worksheet. Review this sample before moving onto the next step.
2. When using the worksheet, start by writing the final root cause statement in the first row.
3. Then, brainstorm school-based practices that could be associated with the final root cause. For example: content related to the root cause is not included in the curriculum. Your data coach will record your responses on chart paper.

4. As a team, reach consensus on the practices that are most likely related to the root cause. Record these practices on the worksheet.
5. From these practices, select one that you will design strategies to address. Record multiple problems if they are related and can be addressed through one initiative.

Sample Problem of Practice Worksheet

Final root cause statement:
Entering students do not have the reading comprehension skills necessary to understand "word problems" in mathematics.
Hypothesised practices that could result in the root cause of the learning problem:
▪ Students are not taught the vocabulary necessary to understand "word problems" in mathematics. ▪ Students are not provided with the reading comprehension tools necessary to "unpack" the information in mathematics word problems. ▪ Students are not given examples of how to approach a word problem. ▪ Students are not asked to solve word problems in the maths curriculum. ▪ Maths teachers are not trained in the reading skills that help students understand mathematics word problems.
Final problem(s) of practice (those that could be addressed through one initiative):
▪ Students are not taught the vocabulary necessary to understand word problems in mathematics. ▪ Students are not given examples of how to approach a word problem. ▪ Students are not asked to solve word problems in the maths curriculum.

Problem of Practice Worksheet

Final root cause statement:
Hypothesised practices that could result in the root cause of the learning problem:
Final problem(s) of practice (those that could be addressed through one initiative):

7.3 Building Your Knowledge Base

Optional

Overview
Objective PLCs will be able to collect research and best practice examples on ways to address the root cause of the problem.
Purpose To provide resources that the PLC data team may use to gain knowledge about the root cause.
Description This section provides resources and a structure to help your PLC data team locate information that will build your knowledge base. The project site can serve as a starting place for gathering research reports related to the problem your PLC data team is addressing and the interventions your team may consider.
Time Prior to session 8

Directions:

1. Each team member should select the root cause or one of the problems of practice to research. The DATAUSE project website (www.datauseproject.eu) is a good source for literature on a wide range of issues in education that can help you gain a deeper understanding of your selected research topic.
2. Prior to Session 8, meet with your PLC data team to discuss each person's findings.
3. Summarise, in writing, your findings and bring them to Session 8. You might find it helpful to use the outline on the following page to guide your research.

Summarising Research

Problem being investigated:
Specific questions to be answered by research:
1. 2. 3.
Research source consulted:
Findings regarding our questions:
1. 2. 3.

Add the summarising research document.

7.4 Consult Your Colleagues Worksheet

Optional

Overview
Objective PLCs will be able to identify staff, outside the PLC data team, who may provide insight into ways to address the root cause of the problem.
Purpose To take advantage of the local knowledge and build networks among colleagues related to the learner-centred problem under investigation.
Description Your PLC data team will use the Consult Your Colleagues Worksheet to help you identify staff who are familiar with the problems and who may be able to suggest ways to address them. They will then plan and assign responsibilities for gathering information from their colleagues to share with the team.
Time Prior to session 8

Directions:

1. Record the root cause and problem(s) of practice that you have identified on the Consult Your Colleagues Worksheet.
2. As a team, brainstorm individuals or groups of colleagues who may be familiar with the root cause or the problem(s) of practice. The data coach will record your ideas on chart paper.

3. As a team, work to develop a list of colleagues to contact in attempts to gain their insight into your inquiry. Record their names in the appropriate cell in the worksheet.
4. For each colleague, record as much information as possible in the worksheet. The categories in the worksheet are just a start; add more information in the "additional comments" section of the worksheet.
5. As a group, assign team members to contact each colleague and gather information to be shared with the team.
6. Organiee a team discussion where members share their findings. Summarise the findings in writing and bring this summary to Session 8.

Consult Your Colleagues Worksheet

Root cause statement:					
Colleague's name	School	Email	Phone	It is important to consult with this colleague because…	Additional comments
Problem of practice statement:					
Colleague's name	School	Email	Phone	It is important to consult with this colleague because…	Additional comments

Wrap Up

Session 7 Summary

- You confirmed the root cause related to the evidence-based problem.
- You obtained resources for the collection of research and best practice examples on ways to address the root cause of the problem.
- You identified staff, outside the PLC data team, who may provide insight into ways to address the root cause.

Next Steps

1. Investigate the practice and research literature to gain more knowledge about the identified problem.
2. As appropriate, engage other staff members in the investigation to gain further insight into the problem.
3. Discuss and summarise, in writing, what the team has collectively learned about the root cause and the problem of practice in preparation for work in Module 8.

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Module 8: Brainstorming Strategies

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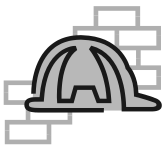
Introduction

Module 8 takes the PLC data team from the diagnosis stage of the inquiry model into the "doing stage." Using the identified problem and root cause from the previous modules, the team will brainstorm possible strategies that may solve the problem. They will then rate the strategies based on their potential impact and feasibility of implementation. The team will discuss the most feasible high impact strategies with colleagues outside the PLC data team to get feedback on the impact and feasibility of these strategies.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
Diagnosis What's the root cause?	☑ Module 5: Analysing Discovery Data ☑ Module 6: Hypothesising Root Causes ☑ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☐ Module 8: Brainstorming Strategies ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation



Module Objectives

Upon completion of this module your PLC will be able to:

1. Use their personal knowledge and experience to identify strategies to address the root cause.
2. Identify “high-impact” strategies to implement in their school.
3. Rate the feasibility of implementing these high-impact strategies.

Overview of Tools, Resources, and Examples

8.1 Brainstorming Possible Strategies

Your PLC data team will use your personal knowledge and experience as well as information that they may have acquired from consulting literature and/or colleagues to suggest strategies that could solve the problem.

8.2 Rating Strategies' Potential for Success

Your PLC data team will identify important qualities that a strategy must have to effectively solve the problem. You will add these qualities to the Strategy Rating Checklist as criteria against which the potential strategies can be rated. The team will then rank order the strategies based on their potential impact.

8.3 Feasibility of Implementation Checklist

Using the Feasibility of Implementation Checklist, your PLC data team will rate and then rank order the high impact strategies based on the relative feasibility of their implementation.

8.1 Brainstorming Possible Strategies

Obligatory

Overview
Objective PLCs will be able to use their personal knowledge and experience to identify strategies to address the root cause.
Purpose To identify a variety of strategies that could feasibly address the root cause to solve the identified problem.
Description Your PLC data team will use their personal knowledge and experience and the information that they may have gained from consulting literature and colleagues to suggest strategies that could solve the problem.
Time 20 minutes

Directions:

1. The data coach will write the root cause statement on chart paper to focus this brainstorming session.
2. Using the knowledge the team has gained, you will brainstorm possible strategies to address the root cause of the problem(s) of practice.
3. The data coach will record the strategies for use in subsequent activities.

8.2 Rating Strategies' Potential for Success

Obligatory

Overview
Objective PLCs will be able to identify "high-impact" strategies to implement in their school.
Purpose To determine which strategies are most likely to have a high impact on the root cause of the problem.
Description Your PLC data team will identify important qualities that a strategy must have to effectively solve the problem. You will add these qualities to the Strategy Rating Checklist as criteria against which the potential strategy can be rated. The team will then rank order the strategies based on their potential impact.
Time 30 minutes

Directions:

1. The Strategy Rating Checklist on page 10 contains several very basic characteristics that a strategy might need to be successful in your school. Review these characteristics and eliminate any that are not appropriate. Add characteristics that you believe are necessary for the success of the strategy in your school.
2. As a PLC, discuss the characteristics that should be eliminated and those that should be added to the checklist. Reach consensus on the final list of characteristics and record the characteristics on the checklist.

3. Write the name of each strategy that the team identified in the previous section's activity as column titles in the Strategy Rating Checklist. Individually rate each strategy against the characteristics in the checklist by placing a tick in the cell next to each characteristic that the strategy has. Repeat for each strategy.

4. The data coach will duplicate the checklist on chart paper. As a PLC, reach consensus on the characteristics of each of the strategies. Rank order the strategies based on the number of ticks each received. Those with the largest number of ticks are your "high-impact" strategies.

Strategy Rating Checklist

	Strategy					
Clearly addresses the root cause						
Is based on sound research						
Endorsed by other schools						
Targets our population of students						
[Insert additional]						
[Insert additional]						
[Insert additional]						
Total						

8.3 Feasibility of Implementation Checklist

Obligatory

Overview
Objective PLCs will be able to rate the feasibility of implementing the "high impact" strategies.
Purpose To determine the feasibility of implementing each of the high impact strategies.
Description Using the Feasibility of Implementation Checklist, the PLC data team will rate and then rank order the high impact strategies based on the relative feasibility of their implementation.
Time 20 minutes

Directions:

1. The Feasibility of Implementation Checklist on page 13 contains several very basic characteristics that a strategy might need to be successful in your school. Review these characteristics and eliminate any that are not appropriate. Add characteristics that you believe are necessary for successful implementation.
2. As a PLC, discuss the characteristics that should be eliminated and those that should be added to the checklist. Reach consensus on the final list of characteristics and record the characteristics on the checklist.

3. Write the name of the high-impact strategies that the team identified in the previous section's activity as column titles in the Feasibility of Implementation Checklist. Individually rate each strategy against the characteristics in the checklist by placing a tick in the cell next to each characteristic that the strategy has. Repeat for each strategy.

4. The data coach will duplicate the checklist on chart paper. As a PLC, reach consensus on the characteristics of each of the strategies. Rank order the strategies based on the number of ticks each received. Those with the largest number of ticks are your high-impact strategies with the highest feasibility for successful implementation.

Feasibility of Implementation Checklist

	High Impact Strategies					
Admin. support						
Teacher support						
Trained staff						
Available training						
Available funding						
Available resources						
Ample time to plan & monitor						
[Insert Additional]						
Total						

Wrap Up

Session 8 Summary

- You identified possible strategies to address the problem.
- You determined which strategies were most likely to have a high impact on the problem of practice.
- You rank ordered the high-impact strategies based on their feasibility of implementation.

Next Steps

1. Consult with your school leadership team to gather feedback on the impact and feasibility of implementing the high impact, high feasibility strategies identified by the team.
2. Consult with the teachers and teaching teams who would work with the PLC data team to implement the strategy to gather their feedback.
3. Meet as a PLC data team to discuss the feedback and to reach consensus on the strategies that you will implement.
4. Using the Communications Organiser introduced in Module 1, draft a memo describing the proposed strategy and the rationale for its selection. Distribute the memo about the selected strategy and ask for any last minute feedback from stakeholders.

Using Data for Improving School and Student Performance

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

Module 9: Developing Action Plans

Education and Culture DG

Lifelong Learning Programme

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Introduction

To this point, your PLC data team has identified a problem and its root cause. Your team has also identified strategies that could address the problem, and has selected and vetted the most feasible strategy. In Module 9, your PLC data team will move forward with this strategy and learn how to craft well written improvement targets and develop an action plan for implementation.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
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Doing What are we going to do about it?	☑ Module 8: Brainstorming Initiatives ☐ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC will be able to:

1. Understand the action planning process.
2. Write measurable improvement targets.
3. Develop an action plan for implementing the initiative.

Overview of Tools, Resources, and Examples

9.1 Action Planning Template

This template provides prompts that will help your PLC data team to frame your action plan.

9.2 Creating Measurable Improvement Targets

Individually, the members of your PLC data team will use the "elements of a well-written improvement target" to practise creating measurable improvement targets from sample scenarios.

9.3 Crafting Improvement Targets for the Action Plan

Your PLC data team will brainstorm what the desired "end state" would be if the problem and its root cause (problem of practice) were effectively addressed. You will record potential "end states", discuss the various options and reach consensus on the "end state" that will be expressed as a measurable improvement target. The team will then craft improvement targets for the identified problem and the root cause of that problem to guide the creation of the Action Plan.

9.1 Action Planning Template

Obligatory

Overview
Objective • Understand the action planning process • Develop an action plan for implementing the initiative
Purpose To introduce the action planning process and look at an example of a quality Action Plan.
Description This template provides prompts that will help the PLC data team frame their own action plan as a next step prior to Module 10.
Time 10 minutes in session with additional work required before the next session

Action Plan Template

School Name: _____ Today's Date: _____ Date this Plan will be Reviewed:_____

Problem	Improvement Target

Root Cause (Problem of Practice)	Improvement Target

Strategy:					
Action Steps	Deadline	Owner(s)	Resources	Implementation Indicators	Interim Outcomes/ Benchmarks

Action Plan Template: Example

School Name: _____ Today's Date: _____ Date of action plan review:_____

Problem	Improvement Target
Students entering secondary school with below expected reading skills have difficulty solving word problems in mathematics.	Increase the percentage of new students in Year 7 with below expected reading skills who demonstrate mastery in solving mathematical word problems on the termly assessment from 45% in 2010-11 to 55% by the end of the 2011-12 school year.

Root Cause (Problem of Practice)	Improvement Target
Our maths teachers do not teach mathematical concepts and associated reading skills in the context of word problems.	For each mathematical concept, all maths teachers will teach how to use that concept and associated reading skills in the context of multiple word problems during the 2011-12 school year.

Strategy: Teach new maths concepts and associated reading skills in the context of word problems.					
Action Steps:	Deadline	Owner(s)	Resources	Implementation Indicators	Interim Outcomes / Benchmarks
Meet with maths teachers who will implement the strategy. Explain the strategy and the teachers' role to gain their support.	30/9/11	PLC data team	Description of strategy with research base	▪ Meeting held by early Sept. ▪ Team explained the strategy	▪ 90% of maths teachers endorse the initiative
Collaborate with maths teachers to develop termly assessments to measure mastery of word problems.	15/10/11	Director of assessment	Computer-based test item generator	▪ At least 2 collaboration meetings held ▪ Assessments reviewed by director of assessment	▪ Development of 3 termly assessments ▪ Validity and reliability established by director of assessment ▪ Teachers commit to administering the assessments

Action Steps:	Deadline	Owner(s)	Resources	Implementation Indicators	Interim Outcomes / Benchmarks
Provide PD to help maths teachers develop activities to teach mathematical concepts and reading skills in the context of word problem solutions.	30/10/11	Head of maths	Researched best practices	▪ Two PD sessions held ▪ Maths coach reinforced PD content in maths team meetings	▪ Each teacher developed at least two new activities
Implement newly developed activities in all maths classes.	30/11/11	Maths teachers	Newly developed activities and resources	▪ Head of maths observes effective implementation in all maths classes	▪ 80% of all maths teachers effectively implement both activities ▪ 100% of all math teachers effectively mplement at least one activity

9.2 Creating Measurable Improvement Targets

Obligatory

Overview
Objective Write measurable improvement targets
Purpose To learn how to create measurable improvement targets through practice and discussion.
Description As individuals, the members of your PLC data team will use the "elements of a well-written target" to practise creating measurable improvement targets from two sample scenarios. Your team will also work to reach consensus on the "best target" for each scenario.
Time 20 minutes

Directions:

1. Using the "elements of a well-written improvement target" on the following page as a guide, each of your team members will review the included practice scenarios and, for each scenario:
   - Identify each of the four elements of a well-written target
   - Write a clear improvement target statement
2. As a PLC Data Team, reach consensus on the most appropriate improvement target statement for each scenario. Possible "answers" are included at the end of this document, which you may want to consult after your discussion.

Elements of a Well-Written Improvement Target

Typical goal or desired Impact:	Typical improvement target statement:
"Increase the achievement of all students in the current Year 7."	"Increase the percentage of students who reach Level 5 in maths by the end of Year 9."

A clearer and more useful improvement target would address the following questions:

1. What will change? The percentage of students who reach the expected level.
2. For what population? All Year 7 students.
3. By how much?
   It is wise to base change predictions on prior performance data and/or predetermined criteria. Too often, improvement targets are set by "gut reaction" and have no real basis. The following is an example of how a target could be set based on external criteria and past performance.
   - What percentage reached Level 5 in 2010-11? 76%
   - What is our aspirational target for this group? 85%
   - What is the deadline for meeting this requirement? 2014
   - What incremental increase must be sustained to meet the requirement in 2014? 85% in 2014 – 76% in 2011 = 9 percentage points difference. Between 2011 and 2014, there are three tests remaining to show progress; 9 percentage points/3 = 3 percentage points/year needed to reach target if linear improvement is assumed.
4. By when?
   The target can be set on an incremental basis such as annual improvement. This would provide a *formative measure* in a multi-year initiative. Or the target could be set for the end of the initiative to provide a *summative measure*. Both incremental (formative) and terminal (summative) targets could be used.
   - By a formative measure, such as an identified annual improvement target? The equivalent of 3 percentage points per year in the example calculation above
   - By a summative measure, such as the 2014 target in the example above? 9 percentage points in 2014
   - After a certain number of years to allow the impact of an intervention to become embedded? This is only recommended if no external time requirements are indicated.

The resulting measurable improvement target compared to the "typical target" initially indicated above.

- Typical: "Increase the percentage of students who reach Level 5 in maths at the end of Year 9"
- Improved: "Increase the percentage of students who reach Level 5 in maths at the end of Year 9 by 9 percentage points in 2014."

Scenarios

Scenario 1:	
In response to significantly low mathematics performance across the city, the LA reallocated resources from the professional development budget to fund the hiring of maths coaches to provide embedded professional development for maths teachers in one of the city's two secondary schools. Within three years, the LA hopes to see at least a 10 percentage point increase in L5+ at KS3 in the students whose teachers participated in the embedded professional development provided by maths coaches.	
Elements:	
What will change?	
For whom?	
By how much?	
By when?	
Improvement target statement:	

Scenario 2:	
The new headteacher has reviewed the data showing that 15% of Year 11 students in 2010 became NEETs (not engaged in employment or training) after leaving school. The corresponding figure for other schools in the area is 5%. The headteacher has tasked one of her deputies to work with your PLC data team to develop a measurable improvement target for 2014 in order to bring the school into line with other schools in the area.	
Elements:	
What will change?	
For whom?	
By how much?	
By when?	
Improvement target statement:	

Scenario 3:	
The senior leadership team, with support from your PLC Data Team, reviewed performance in KS3 maths at each level over the past three years. The data revealed that the percentage of girls was consistently at least five percentage points higher than the percentage of boys at each level. The SLT wants to eliminate this performance gap by 2014.	
Elements:	
What will change?	
For whom?	
By how much?	
By when?	
Improvement target statement:	

Scenario 4:	
At a local secondary heads' meeting meeting, the headteachers of four schools noted that the data displays crafted by your PLC data team clearly showed a positive relationship between high absence and low attainment in 5+ A*-C GCSEs including English and maths. In 2009, 30% of the Year 11 students had been absent for 20 or more days in the two terms leading to the GCSE examinations. Of these, 90% failed to attain the threshold measure. The headteachers, collaborating with your data team, are aiming to have no student with 20 or more absences prior to the 2012 examinations.	
Elements:	
What will change?	
For whom?	
By how much?	
By when?	
Improvement target statement:	

Possible Answers to Scenarios

Scenario 1:	
Elements:	
What will change?	Percentage of students who reach Level 5 in maths.
For whom?	Students in the target school
By how much?	10 percentage points
By when?	Within three years
Improvement target statement:	
In targeted schools, increase the percentage of middle school mathematics students who reach Level 5 or above by 10 percentage points within three years.	

Scenario 2:	
Elements:	
What will change?	The percentage of students becoming NEETs.
For whom?	Year 11 in 2014
By how much?	From 15% to 5%
By when?	2014
Improvement target statement:	
To reduce the percentage of ex-Year 11 NEETs from 15% to 5% by the end of 2013-14.	

Scenario 3:	
Elements:	
What will change?	Maths attainment gap between boys and girls
For whom?	Boys at all levels
By how much?	To equal the percentage of girls at each level
By when?	2014 – End of Year 9 teacher assessments
Improvement target statement:	
Increase the percentage of proficient male students at each grade level to equal the percentage of proficient female students by the 2014 test administration date.	

Scenario 4:	
Elements:	
What will change?	The percentage of students with 20 or more days of absence
For whom?	Year 11 students
By how much?	No student with 20 or more absences
By when?	2012 GCE examinations.
Improvement target statement:	
Decrease the percentage of Year 11 students with 20 or more days of absence prior to the 2012 GCSE examinations to zero.	

9.3 Crafting Improvement Targets for the Action Plan

Obligatory

Overview
Objective Write measurable improvement targets
Purpose To reach consensus on the desired improvement target for the identified problem and the root cause of that problem.
Description Your PLC data team will brainstorm what the desired "end state" would be if the problem and its root cause (problem of practice) were effectively addressed. You will record potential "end states", discuss the various options and reach consensus on the "end state" that will be expressed as a measurable improvement target. The team will then craft improvement targets for the identified problem and the root cause of that problem to guide the creation of the Action Plan.
Time 40 minutes

Directions:

1. Based on your research and feedback gathered from your colleagues, work with your team to brainstorm what the desired end state would look like if the identified problem were solved. Your data coach will record your suggestions on chart paper.
2. Once each team member has made their suggestions, reach consensus on the most important end state.

Definitions of terms in italics can be found in the glossary.

3. Each team member should construct an improvement target that will describe the desired end state for the identified problem using the four elements of a well-written improvement target described in 9.2 as a guide.
4. As a PLC data team, share the draft improvement targets that you each created and reach consensus on the improvement target statement for inclusion in your action plan.

Repeat this process to craft a measurable improvement target that describes a desired end state for the root cause of the problem.

Wrap Up

Session 9 Summary

- You identified and crafted improvement targets.
- You learned the elements of an effective action plan and are prepared to craft a plan to address the identified problem and its root cause.

Next Steps

1. Using the action plan template, construct an action plan to address the identified problem and its root cause.

Using Data for Improving School and Student Performance

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

Module 10: Monitoring Implementation

Education and Culture DG

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Introduction

Module 10 will help your PLC data team finalise your action plan and prepare for implementation. It will also reinforce the need, introduced in Module 9, to monitor the implementation of the initiative and interim outcomes. The monitoring process is a type of formative evaluation that provides data to inform mid-course correction decisions that will improve the implementation of the strategy. A template included within this module will help to facilitate the development of an Implementation Monitoring Plan.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
Diagnosis What's the root cause?	☑ Module 5: Analysing Discovery Data ☑ Module 6: Hypothesising Root Causes ☑ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☑ Module 8: Brainstorming Initiatives ☑ Module 9: Developing Action Plans ☐ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC will be able to:

1. Finalise the action plan for implementing your initiative.
2. Develop an Implementation Monitoring Plan.

Overview of Tools, Resources, and Examples

10.1 Team Review of Draft Action Plan

Your PLC data team will conduct a final review of your draft action plan using the Action Plan Review Checklist. If necessary, members will suggest revisions for incorporation into the plan. By the end of the session, you will be ready to implement your plan.

10.2 First Steps in Creating the Implementation Monitoring Plan

Using your final action plan, your PLC data team will begin to collaboratively develop an Implementation Monitoring Plan. Through the use of the Implementation Monitoring Plan template, the team will provide all the required information for the first several action steps. Your PLC data team will complete the rest of the Implementation Monitoring Plan in subsequent team meetings.

10.1 Team Review of Draft Action Plan

Obligatory

Overview
Objective Finalise the action plan for implementing your initiative
Purpose To review and revise the draft action plan to a final state that is ready for implementation.
Description Your PLC data team will conduct a final review of the draft action plan using the Action Plan Review Checklist. If necessary, members will suggest revisions for incorporation into the final plan.
Time 30 minutes



Directions:

1. Individually, take a look at your PLC's draft action plan. Use the Action Plan Review Checklist on page eight to help with your review. Note any changes that you feel would enhance the implementation of your initiative.
2. Share your ideas with your colleagues. Your data coach will facilitate the review, asking for your feedback on the action plan, section by section.
3. As a team, generate discussion and agree upon any proposed changes.
4. Based on the team's feedback, assign one or two members the task of producing the action plan that will be implemented. When the process is complete, the action plan will be ready for implementation.

Action Plan Review Checklist

School Name: _____ Date: _____

Problem	Y/N	Problem Improvement Targets	Y/N
Is the problem expressed in terms of student outcomes?		Is the target clearly tied to the problem?	
Is there consensus that the problem represents a critical issue in your school?		Is the target expressed in terms of student outcomes?	
Is the problem based on an analysis of multiple sources of data?		Is the target specific and measurable in terms of what will change, for whom, by how much, and by when?	
Root Cause	**Y/N**	**Root Cause Improvement Target**	**Y/N**
Is the root cause something that is within your control to change?		Does the improvement target directly address the root cause?	
Will the root cause, if addressed, resolve the problem?		Is the target specific and measurable in terms of what will change, for whom, by how much, and by when?	
Was the root cause identified through research of best practices?		Has the team identified the data that needs to be collected to assess progress toward the improvement target?	
Action Steps	**Y/N**	**Implementation Indicators**	**Y/N**
Are the action steps logically sequenced?		Are indicators expressed in terms of what you will see differently in the school and classroom?	
Are the action steps discrete and specific?		Are indicators clearly tied to the action step?	
Does each action step have a deadline and an owner?		Can the indicators be measured?	
Do the listed resources adequately support the action step?			

10.2 First Steps in Creating the Implementation Monitoring Plan

Obligatory

Overview
Objective Develop an Implementation Monitoring Plan
Purpose To begin to create your Implementation Monitoring Plan
Description Using your final action plan, your PLC data team will begin to collaboratively develop the Implementation Monitoring Plan. Through the use of the provided Implementation Monitoring Plan Template, the team will complete all the required information for the first two action steps as noted in the first two rows of the action plan. Your PLC data team will complete the rest of your Implementation Monitoring Plan in subsequent team meetings.
Time 45 minutes in session, with rest of work to be completed in subsequent data team meetings.



Directions:

1. Transfer the “Strategy”, “Action Steps,” “Implementation Indicators,” and “Interim Outcomes/Benchmarks” from your action plan to the Implementation Monitoring Plan Template. If a number of closely related actions can be addressed with one indicator or interim outcome, combine them within the table.

2. Identify the data needed to assess the status of each indicator and interim outcome/benchmark and when the data should be collected. Record the data elements and dates in the Implementation Monitoring Plan Template on the following page.
3. Determine who will collect and analyse the data to assess progress for each action step. This person will also be responsible for writing the status report. Note who is responsible in the Implementation Monitoring Plan Template.
4. As a team, select a date for submission of the first status report. Termly reporting is often convenient. Periodic status reports should address the implementation indicators and intermediate outcomes for the action steps that are scheduled to be accomplished during the reporting period.

Implementation Monitoring Plan Template

Original Problem/Issue:
Problem Improvement Target:
Root Cause Improvement Target:

Strategy:				
Action Steps	Implementation Indicators	Data Needed/ Date	Interim Outcomes/ Benchmarks	Data Needed/ Date

Strategy Status Report	
Person(s) Responsible:	Report Date

Repeat this table for additional strategies as necessary.

Implementation Monitoring Plan Example

Original Problem/Issue:
Students perform poorly in the benchmark maths assessment in Year 7.
Problem Improvement Target:
Increase the percentage of Year 7 students with low reading scores on entry who then demonstrate mastery in solving mathematical word problems on the termly benchmark assessment from 45% in 2010-11 to 55% by the end of the 2011-12 school year.
Root Cause Improvement Target:
For each mathematical concept, all maths teachers will instruct on how to use that concept and associated reading skills in the context of multiple word problems during the 2011-12 school year.

Strategy: Teach new mathematical concepts and associated reading skills in the context of word problems.

Action Steps	Implementation Indicators	Data Needed/ Date	Interim Outcomes/ Benchmarks	Data Needed/ Date
1. Meet with maths teachers who will implement the initiative, explain the initiative and teachers' role and gain their support.	▪ Meeting held by early Sept. ▪ Team explained initiative	September Meeting minutes	90% of maths teachers endorse the initiative	Poll results from September meeting

Strategy Status Report	
Persons(s) Responsible: Joe Grundy	Report Date
▪ Meeting held on 10/9/11 ▪ Explanation of initiative distributed and discussed ▪ 80% of maths teachers initially endorsed the initiative ○ This falls short of the September benchmark of 90% and should be discussed with key stakeholders. What led to the shortfall? How can we get back on track?	30/9/11

Wrap Up

Session 10 Summary

- You completed the final draft of your action plan.
- You began to develop your Implementation Monitoring Plan.

Next Steps

1. Implement the action plan.
2. Complete the Implementation Monitoring Plan.
3. Begin to monitor implementation.
4. Collect formative data as required by the Implementation Monitoring Plan.

Using Data for Improving School and Student Performance

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Module 11: Preparing for Evaluation

Education and Culture DG

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Small icons are included in the overview of each section of the guidebook. Each icon serves as a visual cue to what the exercise will entail.

Independent Work	Group Work	Document Review	Template
			
This icon appears whenever PLC data team members are prompted to work as individuals.	This icon appears whenever PLC data team members will be working as a team.	This icon appears when groups will need to refer back to a previous document or resource.	This icon appears when the section includes a customisable template for use by data teams.

Introduction

The PLC data team has developed an action plan to address its identified problem and the root cause of that problem. The team has also developed a detailed plan to monitor the implementation of the action plan. The Implementation Monitoring Plan provides a *formative program evaluation* framework that helps the team gather real time data to inform mid-course correction decisions that contribute to the effectiveness of the strategy.

In Module 11 we will discuss *summative programme evaluation* techniques. *Summative Programme Evaluation,* assessing the outcomes of the strategy against the pre-defined improvement targets, is the natural culmination of the implementation and monitoring effort and is critical for sustainability of the initiative. The findings of the *summative evaluation* can be used to communicate the initiative's successes and areas that need to be refined moving forward through the publication of an Evaluation Report which will also be discussed in Module 11.

Preparation How do we organize for data use?	☑ Module 1: Getting Started ☑ Module 2: Data Literacy
Discovery What's the issue or problem?	☑ Module 3: Identifying a Problem ☑ Module 4: Evaluating Data
Diagnosis What's the root cause?	☑ Module 5: Analyzsng Discovery Data ☑ Module 6: Hypothesising Root Causes ☑ Module 7: Analysing Root Cause Data
Doing What are we going to do about it?	☑ Module 8: Brainstorming Initiatives ☑ Module 9: Developing Action Plans ☑ Module 10: Monitoring Implementation
Evaluation What results did we get?	☐ Module 11: Preparing for Evaluation

Module Objectives

Upon completion of this module, your PLC will be able to:

1. Understand programme evaluation.
2. Develop an Evaluation Plan.
3. Conduct a summative evaluation.
4. Publish an evaluation report.

Overview of Tools, Resources, and Examples

11.1

The Evaluation Plan

Using your action plan, Implementation Monitoring Plan, and what you have learned in Module 11, PLC data team members will begin to construct an evaluation plan to guide the *summative evaluation* of the strategy's success in achieving the improvement targets.

11.2

Evaluation Report

Using your action plan, Implementation Monitoring Plan, and what you have learned from drafting the evaluation plan, PLC data team members will construct an evaluation report that communicates, to stakeholders, the results of the *summative evaluation* of the strategy's success in achieving the improvement targets.

11.1 The Evaluation Plan

Obligatory

Overview
Objective Develop an evaluation plan
Purpose To develop a plan that will guide the evaluation process.
Description Using your action plan, Implementation Monitoring Plan, and what you have learned in Module 11, PLC data team members will begin to construct an evaluation plan to guide the *summative evaluation* of the strategy's success in achieving the improvement targets.
Time 45 Minutes



Directions:

1. Access copies of the action plan and the Implementation Monitoring Plan that your team created in Modules 9 and 10.
2. Review the Process for Creating an Evaluation Plan (page 9) and the Evaluation Plan Template (page 10) with your data coach.
3. As a PLC data team, capture the required information in each section of the evaluation plan template.
    a. Since many of the required elements can be taken from documents that you have previously constructed, it would be most efficient if the Evaluation Plan

Template, action plan and Implementation Monitoring Plan are accessible in electronic format on the same computer with projection capability.

b. Have a team member project the Evaluation Plan Template as the team discusses each section. As the team reaches consensus on the information to be included in each section, record it in the electronic template. Be sure to save your work!

c. Alternatively, the data coach can record the information on chart paper to be entered electronically later.

4. Once the plan is complete, assign responsibilities and timelines for the implementation of the plan by PLC data team members.

The Process for Creating an Evaluation Plan

- **Step 1: Describe the strategy to be evaluated.**
    a. Population (students/schools/districts)
    b. Desired goal/end state
    c. Strategies/interventions to be used

- **Step 2: Define the measurable improvement targets.**
    a. Identified problem
    b. Root cause

- **Step 3: Select an appropriate evaluation design.**
    a. Establish control/comparison groups if possible
    b. Select measurement tools (pre- and post-tests; surveys; review of extant data)
    c. Identify what data needs to be collected, by when and by whom

- **Step 4: Form inferences, findings, and conclusions from the results.**
    a. Have the improvement targets been met?
    b. Why was the strategy successful?
    c. How can the strategy be improved?

- **Step 5: Provide a method to communicate results.**
    a. To whom?
    b. When?
    c. How?

Evaluation Plan Template

Step 1: Describe the strategy to be evaluated.		
Population: (Who will the strategy have an impact on?)		
Desired Goals/End State: (from IMP)		
Strategy being implemented: (from Action Plan or IMP)		
Step 2: Define the measurable improvement targets.		
Problem: (from IMP)		
Root cause: (from IMP)		
Step 3: Select an appropriate evaluation design.		
Control/comparisons groups		
Measurement tools		
Additional data needed	Collected by whom?	Collected by when?

Step 4: Form inferences, findings, and conclusions from the results.	
Make factual observations	
Craft inferences/ findings/conclusions	
Step 5: Provide a method for communicating the results (the Evaluation Report).	
To whom?	
By when?	
How?	

11.2 The Evaluation Report

Obligatory

Overview
Objective Publish an evaluation report
Purpose To develop a report that will summarise the initiative, present findings and next steps and communicate results to stakeholders.
Description Using your action plan, Implementation Monitoring Plan and what you have learned from implementing the evaluation plan, PLC data team members will construct an evaluation report that communicates, to stakeholders, the results of the summative evaluation of the strategy's success in achieving the improvement targets.
Time 15 minutes in session. Multiple PLC data team meetings to complete.

Directions:

1. Review the Evaluation Report Outline (page 13) and the Evaluation Report Template (page 14) with your data coach.
2. Some of the information that appears in the evaluation report can be provided prior to the full implementation of the strategy. As a PLC data team, review the outline and template and identify those areas that can be completed now. Assign responsibilities and timelines for the completion of these sections.
3. Once the strategy has been fully implemented, complete the balance of the evaluation report and publish it.

Evaluation Report Outline

I. Overview: a summary that describes the problem being addressed by the action plan

   A. Original focusing question
   B. Summary of findings from the initial analysis of the discovery data
   C. Description of the identified problem and root cause
   D. Measureable improvement targets

II. Implementation Description

   A. Brief narrative (1-2 paragraphs) identifying the major steps taken as part of the action plan to implement the strategy
   B. Table detailing the action steps taken, including status updates

III. Evaluation Results

   A. Data displays depicting the results of the action plan
   B. Short narratives to describe findings from the analysis of results

IV. Recommendations and Next Steps

   A. Identification of new focusing questions
   B. Identification of immediate next steps to re-enter the Data Inquiry Model

Evaluation Report Template

Section I: Overview	
Original issue/focusing question	
Summary of initial findings	
Identified problem	
Root cause	
Improvement targets	Identified problem:
	Root cause:

Section II: Implementation Description			
Description of major actions taken			
Detailed Action Step Results			
Action step	Implementation indicator	Date completed	Results

Section III: Evaluation Results
Use this section to summarise your results with data displays and written descriptions of your findings.

Section VI: Recommendations and Next Steps	
New focusing questions	
Next steps	*New team formulation, creation of new data displays, identification of audiences for communication…*

Wrap Up

Session 11 Summary

- You developed an understanding of programme evaluation.
- You began the development of an evaluation plan.
- You prepared to conduct the evaluation and publish an evaluation report.

Next Steps

- Continue to implement the action plan.
- Use the Implementation Monitoring Plan.
- Complete the evaluation plan.
- Collect formative data as required by the Implementation Monitoring Plan.
- Collect data consistent with the evaluation plan.
- Upon full implementation of the strategy, complete the evaluation and publish the evaluation report.
- Coordinate the administration of the Data Use Survey by your school staff. Analyse the results as you did in Module 1. Publish your findings as you did with the initial Data Use Survey.

Using Data for Improving School and Student Performance

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

Glossary

Education and Culture DG

Lifelong Learning Programme

PUBLIC CONSULTING GROUP

iNet

Specialist Schools and Academies Trust

THE SCHOOLS NETWORK™

ŠIUOLAIKINIŲ DIDAKTIKŲ CENTRAS

MODERN DIDACTICS CENTRE

UNIVERSITY OF TWENTE.

ifib

Institut für Informationsmanagement Bremen GmbH

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Action Plan:

A step-by-step outline of the actions that have to be taken to implement an initiative and achieve a desired outcome.

Aggregation:

Data that is presented in summary (as opposed to student-level data or data broken down by subgroup).

Average:

A single value (as a mean, mode, or median) that summarises or represents the general significance of a set of unequal values. A measure of central tendency.

Collaborative Data Analysis Process:

Within the PLC data team, colleagues analyse data collaboratively and reach consensus on what the data says and the inferences that can be made from the data.

Benchmark Assessments:

Generally used as part of a formative evaluation system, benchmark assessments are administered to periodically monitor the progress of individuals and groups of students. Benchmark assessments may also be referred to as “interim” or “common” assessments when administered to all students in a subject, year group or school.

Causation:

A relationship in which one action or event is the direct consequence of another. Causation causes correlation.

Correlation:

A mutual relationship between two or more things. Correlation does not prove causation.

Criterion Referenced Tests (CRTs) or Standards-Based Tests (SBTs):

Assessments in which test items are aligned with specific standards and scores are reported relative to those standards. In CRTs or SBTs, student performance is not judged relative to the performance of other students as in norm-referenced tests, but rather based on satisfying the standards.

Data:

Data types used in formative and summative evaluations include:

- *Assessment Data:* Data gathered from "test items" designed to be valid and reliable measures of specific learning outcomes.
- *Documents:* Existing records (*eg* as opposed to transcribed results of interviews), including newspapers, magazines, books, websites, memos, annual reports, studies, and so on. Often analysed using content analysis.
- *Discovery Data:* Defined as part of the data inquiry model, discovery data are the preliminary data that is gathered and analysed to initiate the inquiry process
- *Input Data:* Data that is added to a system that will influence the process or output data.
- *Interview Data:* Data that is gathered through person to person dialogue. Interview data is frequently coded to allow aggregation and analysis.
- *Observationl Data:* Data gathered through personal observation of behaviours. The observer's notes serve as the data source and are often coded and aggregated for analysis.
- *Output Data:* Data that describes results of the intervention during implementation such as the number of staff who participated in a training or the quantity of resources allocated to the intervention.
- *Outcome Data:* Data that describe the end state after an intervention has been implemented and are used to assess the impact of the initiative.
- *Primary Data:* Data of any type gathered directly by the researcher through administration of tests or surveys or by conducting interviews, observations etc.
- *Process Data:* Data that describes an intervention or activity as it is being implemented.
- *Quantitative Data:* Data that can be expressed numerically, such as a test score. Quantitative data can be represented visually in graphs, histograms, tables, and charts and can be statistically manipulated.

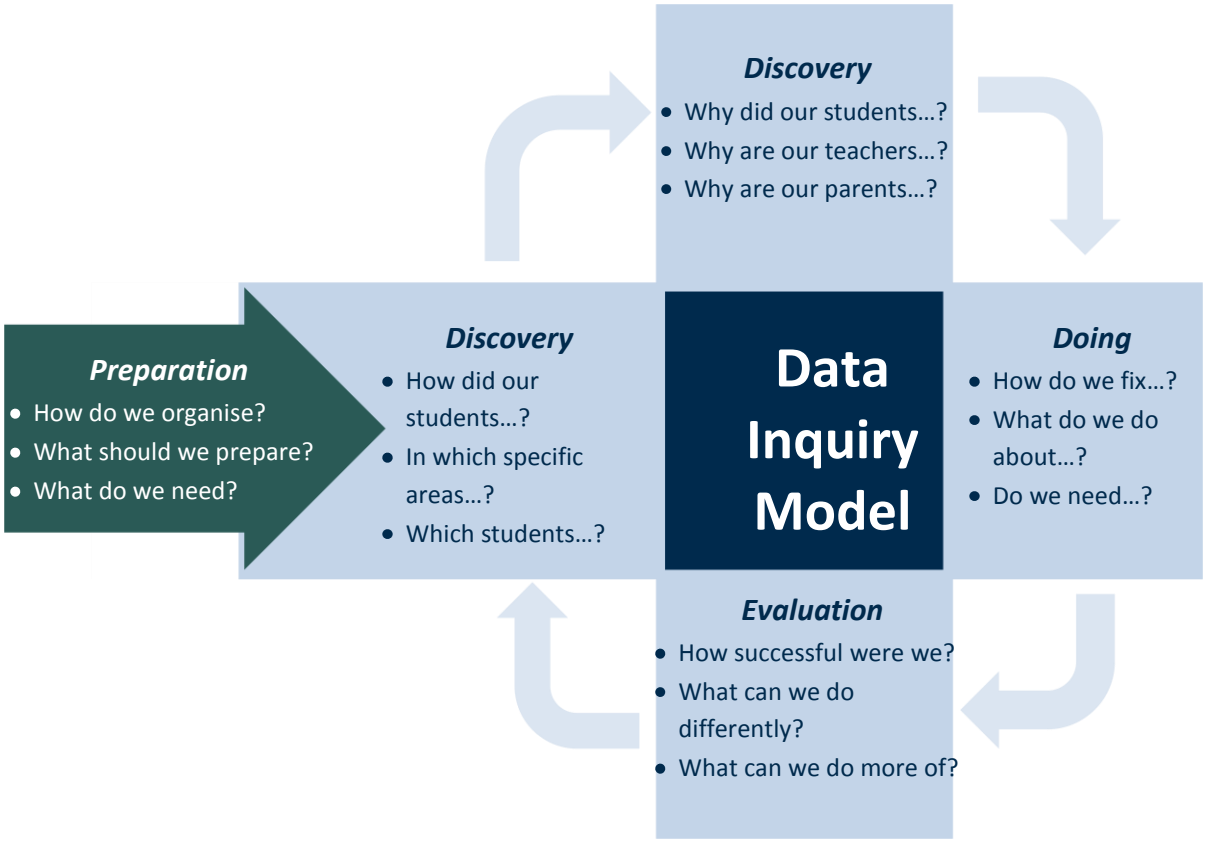
- *Qualitative Data:* Narrative or categorical data that describes meaning for research subjects, such as interview or observation data, both in raw form (*eg* notes, recordings) and when synthesised into a narrative description.
- *Secondary Data:* Data of any type that was previously collected by others that a researcher may wish to analyse.
- *Survey Data:* Data that is gathered through electronic or paper media in response to specific prompts. Responses are often provided by selecting from several provided options.

Data Inventory:

A catalogue of the data available in a school, who controls it, its location, its accessibility and how the data is being used.

Data Inquiry Model:

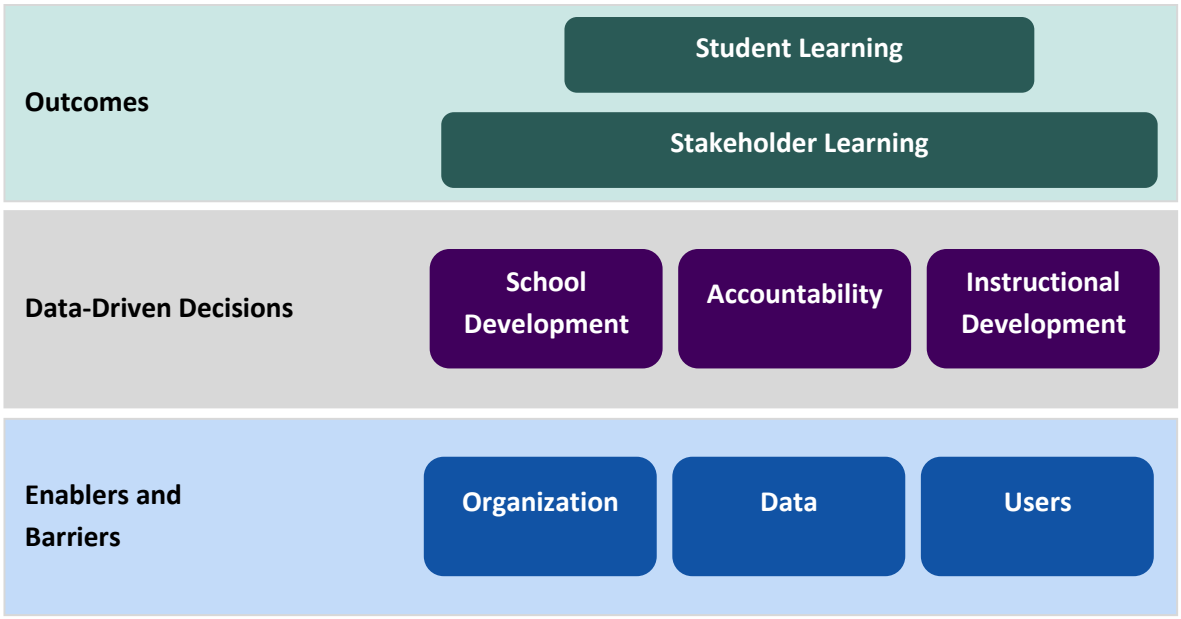
The framework consists of five stages: Preparation, Discovery, Diagnosis, Doing and Evaluation. These stages guide a PLC through all critical steps of the inquiry process.



Data Use Improvement Plan:

An action plan designed to eliminate one or more "barriers" that limit effective data use in the school.

Data Use Theory of Action:



The Data Use Theory of Action recognises policy as the major influence on data use in schools. School policies affect each of the following foundations for effective data use by either enabling or erecting barriers to them.

- The *organisation* (*eg* availability of data use expertise, teacher collaboration time assigned for data use),
- The *data* (*eg* accessibility, quality) and
- The *users* (*eg* knowledge, skills, and attitudes).

School policies impact how extensively, if at all, school personnel use data to inform their decisions. The Data Use Theory of Action identifies three types of data-driven decision making:

- For *school development* (*eg* policy development, teacher professional development, flexible groupings),

- For *accountability* purposes (*eg* meeting legal demands, communication with stakeholders) and
- For *instructional development* (*eg* monitoring progress, adjusting instruction).

If data is used for these different purposes, this may lead to *stakeholder* (*eg* teachers, school leaders, parents) *learning*. For example, a teacher might decide to make instructional changes based on data (data-driven decision). This leads to improved instruction by the teacher (outcome: teacher stakeholder learning). Stakeholder learning, in turn, may lead to *student learning* (*eg* inquiry of students into their own learning and improved student achievement).

Data Quality:

The attributes of a data set that make it useful such as: validity, reliability, completeness, accuracy, timeliness and relevance to the question being investigated.

Deviation:

The difference between a value in a frequency distribution and a fixed number (as the mean).

Diagnostic Assessments:

Most commonly used at the classroom level, diagnostic assessments are part of a formative evaluation system to monitor progress and to identify specific strengths and weaknesses of students. The results of diagnostic assessments are used to inform instructional decisions.

Disaggregation:

Summary data split into different subgroups (*eg* gender, race, ethnicity, economic status etc).

Enablers and Barriers:

Terms used in the Data Use Theory of Action to describe policies, structures, capacities, or processes that either support (enablers) or hinder (barriers) effective data use in the schools.

Equating:

A set of statistical procedures undertaken in order to a) adjust for differences in the difficulty of different test forms for the same subject area and levels from year-to-year (horizontal equating); or b) scale test scores (and/or performance levels) so they have a consistent meaning across adjacent levels (vertical equating, vertical scaling, vertical articulation or moderation).

Evaluation Report:

A summary of the problem being addressed, the initiative to address the problem, the status of the initiative's implementation over time and findings based on the formative and summative data collected. The report provides conclusions and recommendations to guide future action plans. A major function of the report is to communicate with stakeholders about the initiative's impact.

Factual Observations:

A statement about what the data "says" without any interpretation. Factual observations are the first step in the data analysis process and they provide the basis for making sound inferences.

Formative Programme Evaluation:

Real time measure of the implementation of a programme that periodically tests for progress against implementation indicators, benchmarks and interim outcomes.

Frequencies:

- *Absolute Frequency:* A statistical term describing the total number of trials or observations within a given interval or frequency bin. The frequency bins can be of any size, but they must be mutually exclusive, exhaustive and the data must be grouped.
- *Relative Frequency:* The proportion of all given values in an interval, *ie* the frequency of the event/value divided by the total number of data points.
  For example: If you picked 12 marbles out of a bag and 9 of them were green, the frequency of green marbles would be 9, but the relative frequency would be that number (the frequency) divided by the total number of marbles, so the relative frequency would be 9/12 or 3/4.

Generalisation:

Application of an inference to a population larger than the sample. The process of using data from a sample of students to describe the behaviour of all students in the school.

High-Impact Initiative:

An initiative that has a high likelihood of affecting a large percentage of the target population and to achieve the improvement target.

Hypothesis:

A tentative assumption made in order to draw out and test its logical or empirical consequences.

Implementation Monitoring Plan (IMP):

Similar to and derived from the action plan, the IMP serves to focus attention on the implementation indicators, interim outcomes, and benchmarks. It provides a plan for the collection of appropriate data and periodic review of the status of the initiative. The IMP provides valuable formative information needed to adjust the action plan as well as to create the summative evaluation report.

Implementation Indicator:

Describes what it will "look like" if the strategy or initiative is being implemented effectively and as planned.

Improvement Target:

Describes, in measurable terms, what that end state will be when the desired improvement is achieved.

Inference:

Formed from the act of inferring or passing from one proposition, statement or judgment considered as true to another whose truth is believed to follow from that of the former. In the DATAUSE project, inferences are formed from observations of factual data. Inferences can also be made from statistical sample data to generalisations (as of the value of population parameters) usually with calculated degrees of certainty.

Interim Outcomes/Benchmarks:

Measurable formative results, established at the outset of the initiative, to provide insight about the progress of the initiative.

Limiting Factors:

Often there are one or more factors that limit a school's ability to achieve systemic data use. Once these limiting factors are identified and removed, the school can move forward toward using data to inform decisions at all levels.

Mean (Arithmetic):

A value that is computed by dividing the sum of a set of terms by the number of terms.

Median:

A value in an ordered set of values below and above which there is an equal number of values or the arithmetical mean of the two middle values if there is no one middle number.

Measure:

Outcome data that can be used to measure the performance of a student or group of students. Measures may include test scores, attendance, behaviour, grades and credits earned.

Mode:

In a set of numbers the mode is the most frequently occurring value.

Norm:

A standard, model or pattern regarded as typical (*eg* the current middle-class norm of two children per family). In the context of this project, team norms are the pattern of behaviours accepted by the PLC data team to guide their interactions and procedures.

Norm-Referenced Test:

An assessment in which performance is reported relative to the performance of other test-takers on a scale from 1 to 100 (percentile rank).

Outcome Programme Evaluation:

Provides a measure of the impact or outcome of a programme as judged against predefined criteria (measurable outcomes).

Percentile Rank:

A student's score is reported as the percentage of students in the norming population who had scores equal to or lower than the student. For instance, student X earned points equal to or higher than 80% of the other test takers. The student therefore scored at the 80th percentile. The "norming population" is usually a large random sample of test-takers.

Population:

Every student who is eligible to become a member of a specific sample of students. For example, the population of Year 11 students is all Year 11 who are enrolled in the group being studied.

Problem Statement:

A clear, succinct, evidence-based statement of the problem revealed through analysis of data related to the issue under investigation.

Process Programme Evaluation:

Provides information on how a programme works; how it produces results; if it is being implemented faithfully; and suggests how it might be improved.

Professional Learning Community (PLC) Data Team:

A professional learning community (PLC) data team is an extended learning opportunity to foster collaborative learning among colleagues within a particular work environment or field. It is often used in schools as a way to organise teachers into working groups. In the context of this project, the PLC data team is organised to learn more about and take action with data.

Question Types:

- *Discovery Questions:* Questions that are framed to initiate an inquiry based on preliminary or "discovery data".
- *Diagnosis Questions:* Questions that ask why something is happening. Diagnosis questions are used to probe deeper into the data that result from "discovery questions" in an attempt to isolate the root cause of the phenomenon described by the data.
- *Doing Questions:* Questions that ask what can be done or what action should be taken to address the root cause uncovered by asking "diagnosis questions" and the collection of "diagnostic data."
- *Focusing Question:* A "high level" question related to an issue of interest that serves to initiate an inquiry and suggest the preliminary data that need to be collected and analyzed.
- *Clarifying Question:* A follow-up question that guides deeper inquiry into the initial issue and suggests additional data that need to be collected and analysed.

Raw Score:

The number of points earned before any score transformations are applied. For instance, a student earned a "raw score" of 85 out of 120 possible points on an assessment.

Reliability:

The degree to which the results of an assessment are dependable and consistently measure particular student knowledge and/or skills. Reliability is an indication of the consistency of scores across markers, over time or across different tasks or items that measure the same thing. Thus reliability may be expressed as a) the relationship between test items intended to measure the same skill or knowledge (item reliability), b) the relationship between two administrations of the same test—or comparable tests— to the same student or students (test/retest reliability) or c) the degree of agreement between two or more markers (marker reliability). An unreliable assessment cannot be valid.

Sample:

A group of students included in a data set. For example, the group of Year 11 students in a school for any one school year is a sample of the entire population of Year 11 students in the LA. The extent to which that group of students is representative of the entire population is the extent to which generalisations can be made about similar students in the future.

Sampling Error:

A sampling error is statistical terminology for the possibility that a particular sample under study may be unusual in some way, leading to invalid or inaccurate inferences about the characteristics of the larger population from which the sample was drawn. For example, when comparing the performance of Year 11 students in one year with those in the next, it is important to bear in mind that the performance is based on two different groups (samples) of Year 11 students who may have different characteristics.

Scaled Scores:

In the same way that the Celsius temperature scale can also be expressed on the Fahrenheit scale, student raw scores can be converted to scaled scores. Equating adjustments may result in different raw score ranges for performance levels from year-to-year. Raw scores can be scaled so that scaled score ranges for performance levels stay the same from year to year.

Scoring Rubrics:

Guidelines for assigning values to student performance such as checklists, yes or no, numerical rating scales (*eg* 1 to 6), or descriptive (*ie* the student presented multiple points of view to support her essay).

Standard Error of Measurement (SEM):

Based on the reliability of a test—the higher the reliability, the lower the SEM. Standard error of measurement can add a band of "uncertainty" around individual raw scores and scaled scores.

Standardisation:

A consistent set of procedures for designing, administering and scoring an assessment. The purpose of standardisation is to assure that all students are assessed under the same conditions so that their scores have the same meaning and are not influenced by differing conditions. Standardised procedures are very important when scores will be used to compare individuals or groups.

Strategy

A plan of action designed to achieve a particular goal.

Summative Programme Evaluation:

Measures of the effectiveness or impact of a programme at a given point in time against pre-defined criteria (improvement targets, measurable objectives, outcomes etc.).

Triangulation:

A process that makes data more reliable and valid by using different sources of data (respondents, time, location), different methods (interviews, assessments, questionnaires) and different types (quantitative and qualitative) next to each other. The advantages of one method can compensate for the disadvantage of the other.

Validity:

The extent to which an assessment measures what it is supposed to measure and the extent to which inferences and actions made on the basis of test scores are appropriate and accurate. For example, if a student performs well on a reading test, how confident are we that the student is a good reader? A valid standards-based assessment is aligned with the standards intended to be measured, provides an accurate and reliable estimate of students' performance relative to the standard and is fair. An assessment cannot be valid if it is not reliable.