Education and Culture DG
Lifelong Learning Programme

EACEA
Education, Audiovisual & Culture Executive Agency

Using Data for Improving School and Student Performance

Using Data for Improving School and Student Performance

Final Report Public Part

510477-LLP-1-2010-1-PL-COMENIUS-CMP

Project information

Project acronym:		DATAUSE
Project title:		Using Data for Improving School and Student Performance
Project number:		510477-LLP-1-2010-1-PL-COMENIUS-CMP
Sub-programme or KA:		COMENIUS
Project website:		www.datauseproject.eu
Reporting period:	From	01/11/2010
	To	31/10/2012
Report version:		1
Date of preparation:		28/12/2012
Beneficiary organisation:		PCG Polska Sp. z o.o.
Project coordinator:		Małgorzata Marciniak
Project coordinator organisation:		PCG Polska Sp. z o.o.
Project coordinator telephone number:		+48 42 2908 222
Project coordinator email address:		mmarciniak@pcgeu.com

This project has been funded with support from the European Commission.

Executive Summary

Data have become increasingly important in an age of increased accountability and significant school autonomy. The DATAUSE project was created to build the capacity of school leaders and staff and establish learning communities to support data use and contribute to improved educational outcomes.

The aims of the project included: helping school leaders establish a vision for using data to improve educational outcomes, increasing the understanding of how to maximize use of available data, building key data use skills among school leaders and helping leaders use data to inform decisions.

Objectives that helped to accomplish these aims included: research and documentation of best practices for using data, building and administering a data use survey instrument that measures the extent of data use in schools, designing and piloting a data use curriculum for school-based professional learning communities (PLCs), delivering a training and materials on data use to the PLCs, collecting feedback from on course curriculum and preparing revised course materials and structure.

The project's **short term target groups** included school-based PLCs that were established for the purpose of the project in 10 participating schools, based in 5 partners' countries. PLCs were determined within the context of the local settings and they included: teachers with various specializations, head teachers, deputy directors, school psychologists.

Long-term target groups included educational leadership training institutions and organizations, district and regional administrators and leaders, research institutions, school leaders and teachers, and ultimately, students.

Project consortium was composed of partners who possess miscellaneous expertise within education and consulting as well as experience in using data in schools.

The project involved **numerous research methodologies, strategies, and approaches** to develop the project deliverables effectively. Some of them included: methodology for the exploratory research of data use, Data Use Theory of Action, Data Inquiry Model as well as the analysis and interpretation of data use survey results. The project employed also strategies in the areas of quality management, dissemination and exploitation as well as project management.

The first year of the project produced **project deliverables** which included: comparative report on data use across 5 partner countries, data use survey, data use survey results report and analysis, data use professional development course, data coaches guide, a website and an e-learning platform. The second year of the project focused on implementation of the course in PLCs, collaboration between partners and PLCs including numerous consultations, collection of the feedback concerning course curriculum and organization as well as preparation of the revised course curriculum and structure, dissemination activities performed nationally in the partnership countries and internationally.

Final evaluation of the project was performed by measuring against the established set of success indicators, proving that the attitude of teachers to using data has become more positive, data use knowledge and skills of teachers have improved, teachers use data for instructional as well as school improvement more often and systematically and collaboration in school has improved. This has been confirmed based on individual case studies analyses of schools participating in the project. Additionally, both project consortium and PLCs declare that as a consequence of those actions student outcomes should improve which shall be observed within the coming years with one school already providing evidence for a such positive tendency.

The website (http://www.datauseproject.eu) aims to be the international venue for disseminating key information on project implementation, deliverables and ways of communication. The project website will be maintained for at least three years beyond the lifetime of the project.

Table of Contents

1. Project Objectives

The DATAUSE project was created to build the capacity of school leaders and staff to establish learning communities where data are used to improve educational outcomes.
The aims of the project included:

- helping school leaders establish a vision for using data to improve educational outcomes;
- increasing the understanding of how to maximize use of available data;
- building key data use skills among school leaders;
- helping leaders use data to inform decisions.

Objectives that accomplished these aims included:

- research and documentation of best practices for using data to improve instructional outcomes;
- building and administering a data use survey instrument that measures the extent of data use in schools both at the beginning and the end of the project;
- designing and piloting a data use professional development curriculum for school-based professional learning communities;
- delivering a training and materials on data use to the professional learning communities;
- collecting feedback from schools and refining the Data Use Course content and structure.

The project's **short term target groups** included school-based professional learning communities (PLCs) that were established for the purpose of the project in 10 participating schools, based in 5 partners' countries – Poland, United Kingdom, Germany, Lithuania and the Netherlands.
The benefits for each school taking the Data Use Course included:

- practicing the process of data collection and analysis to solve school problems through problem identification, root cause analysis, action planning, initiative implementation and monitoring as well as evaluation;
- developing a professional school-based team proficient in data use to support and spread the methodology implementation;
- hands on application of data use principles to address an urgent issue identified by the school;
- learning a universal data-informed process of problem solving.

The envisioned impact upon the schools was to observe improvement as a result of a structured, data-informed process that included identifying and solving a student centred problem.
Long-term target groups identified for this project included educational leadership training institutions and organizations, district and regional administrators and leaders, research institutions, school leaders and teachers, and ultimately, students.
The benefits for the long term target groups included developing their awareness about the available suite of tools, materials and methodologies to support schools in reaching better outcomes. The envisioned impact upon this group was to nurture a new approach to school improvement. Long-term target groups were reached by numerous dissemination activities performed by project consortium both nationally and internationally. More information on that can be found in the following parts of this report.

2. Project Approach

The project involved **numerous research methodologies, strategies, analyses and approaches** that helped to develop the project deliverables effectively. They included:

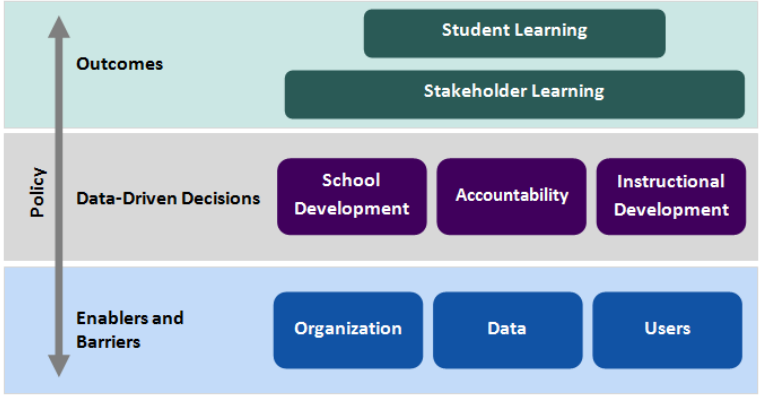
1. **Methodology for the exploratory research of data use** across partner countries serving to build knowledge and understanding of data use context and specificity in all partner countries

In the initial phase of the project the partners conducted research to understand current data use practices in partner countries, including: Poland, United Kingdom, the Netherlands, Lithuania, and Germany. In each of the five countries research was performed using a qualitative case study approach. Each partner replicated a study on data use conducted by Schildkamp & Kuiper (2010) in the Netherlands. Each project partner collected policy documents (e.g. inspection reports, self-evaluation results, school plans etc.) of at least two schools participating in the project. Moreover, interviews were administrated with school leaders and teachers of these schools. In Poland, 11 teachers and 2 (assistant) school leaders of two schools were interviewed. In United Kingdom, 6 teachers and 8 (assistant) school leaders of four schools were interviewed. In the Netherlands, 11 teachers and 21 (assistant) school leaders of six schools were interviewed. In Lithuania, 15 (assistant) school leaders of two schools were interviewed. In Germany, 6 teachers and 6 (assistant) school leaders of two schools were interviewed. The results were analysed in all countries using a pre-agreed coding scheme developed by Schildkamp & Kuiper (2010). The results of the document analyses and interview analyses resulted in case descriptions for each school in terms of data use practices found in these schools, results of data use, and factors enabling and hindering data use. All the countries used a narrative as well as data-matrix case report structures to perform the research. These case reports were used as a basis for the cross-case analyses. Although data from such a small sample of schools do not permit extensive generalizations of the findings, they offered valuable new insights into the role of the use of data within schools in each of the countries and were received with great interest by academia.

2. **Data Use Theory of Action** construct which provided the framework for the data use survey

Based on the results of the research, additional literature review, and partners' international experience, the project consortium developed a Data Use Theory of Action. This construct provided the framework for the data use survey and the foundations for the Using Data Professional Development course.

The Data Use Theory of Action:



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

- the **organization** (e.g. availability of data use expertise, teacher collaboration time assigned for data use, governance structures),
- the **data** (e.g. availability, accessibility, quality), and
- the **users** (e.g. knowledge, skills, attitudes)

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

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

If data are used for these different purposes, the theory of action asserts that a key outcome will be **stakeholder** (e.g. teachers, school leaders, parents) **learning**. According to the theory of action, stakeholder learning (and changes driven by that learning) would ultimately lead to improved **student learning** because educational improvements would be based on students' specific needs and grounded in best practices drawn from a variety of sources.

Finally, the Data Use Theory of Action recognizes **policy** as a major influence on data use in the schools, influencing factors that enable or hinder data use, the types of decisions that are made using data, and ultimately the extent to which data use results in meaningful outcomes. For example, policy may determine to a large extent the types of data that are available (e.g. does a country use a national standardized assessment system or not).

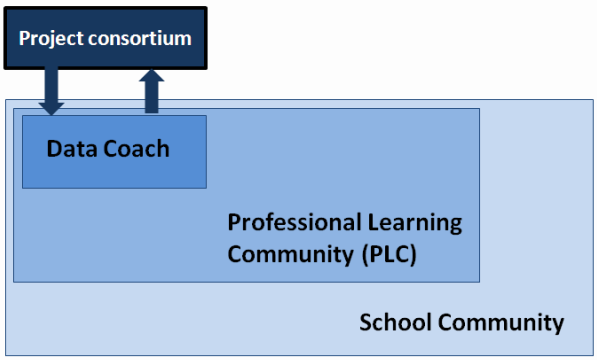
The Theory of Action developed within this project gains international recognition due to its strong message and universal applicability. Project partners are promoting this construct within their academic and business work and exploring further as an important input to the development of the state-of-the art in the area of data use in education.

3. **Establishing PLCs** – setting up cooperation structures with schools

The project governance structures were set up in each partner-school. The PLCs in each school were comprised of representative staff from the school, and were charged with going through the data use professional development course and coordinating data use throughout the school. Each of the schools identified a data use champion, known as a Data Coach, whose responsibilities included:

- Attend an intensive training workshop on data use lead by project partners;
- Deliver the data use training course to the school team;
- Provide coaching and consulting on data use in their school with partners' support;
- Serve as a liaison between the school and the project's team of partners, maintaining positive momentum in their school while communicating needs and lessons learned to the partners.

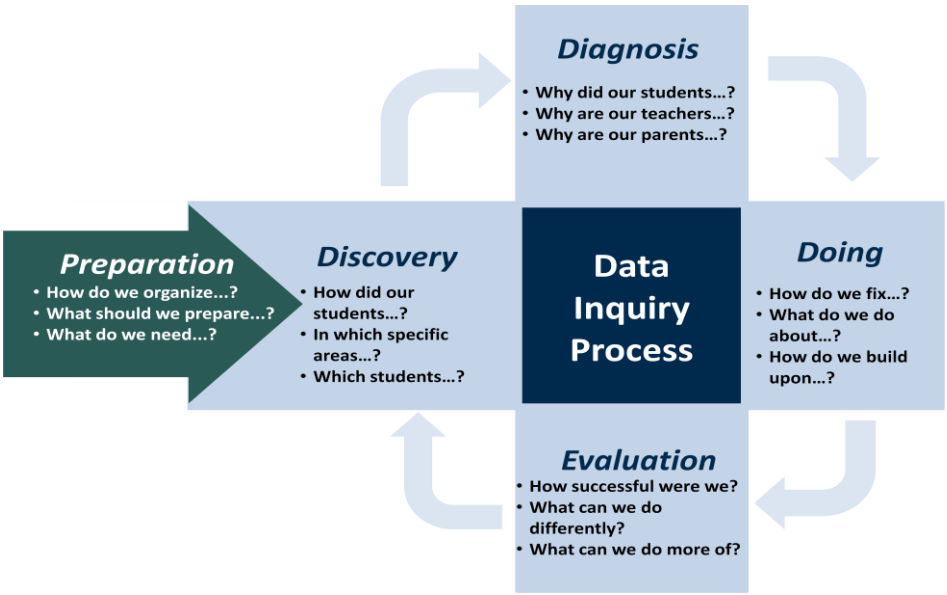
The table below depicts the organizing structure that has been put in place in all PLCs:



The instruments used by the consortium to put the governance structures in place included an invitation letter describing the scope of involvement expected from a PLC throughout the project as well as a written contract listing the mutual responsibilities of a partner and a PLC. Such organizing structure proved great in all participating schools as it gave an opportunity for collaborative work and learning on-the-job with the possibility of constructive input exchange between the professionals.

4. **Data Inquiry Model** which formed the implementation framework for the Data Use Theory of Action

The Data Use Course is based on the inquiry model which provides a framework to support PLC 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 cycle is preceded by a Preparation stage which allows for proper planning and building the capacity, competences, and orientations in the team to work collaboratively together. In addition to guiding the PLC through a structured development process the Data Use 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.



The Data Inquiry Process won its users with the simplicity of explaining the need for asking the right questions in the right order. Simple as it sounds, it turned out to be revolutionary to many PLCs. With the model they were able to structure properly their school processes by starting with an in-depth analysis of the problem, then its diagnosis, and only then taking actions. The process proved revolutionary in teaching the PLCs' members the art of asking

questions and answering them with the use of data. It also proved the need for rational and systematic approach to solving problems with the use of school data.

5. **Tests and analyses** used to generate individual reports for schools, prepare the analysis and interpretation of data use survey results.

Two surveys were conducted among schools in order to investigate their attitude and proficiency in data use, before and after the Data Use Course implementation. After collecting the results from both of the surveys, they were analyzed for trends and patterns in each of the countries and in the consortium as well. The analyses and methodologies applied included:

- For datasets & displays in school reports: calculation of distribution in percentages, mean values, standard deviation, visualizations of the results as bar charts for individual school reports, visualizations as clustered bar charts for international comparison.
- For data analysis: data cleansing, test for normal distribution, test for scale usage, test for reliability via Cronbachs- α of constructed variables (survey categories), bivariate approach including: correlation analysis, regression analysis with Bonferroni post hoc testing; multivariate approach including: exploratory factor analysis and structural equation modelling (cross-country and country-wise).

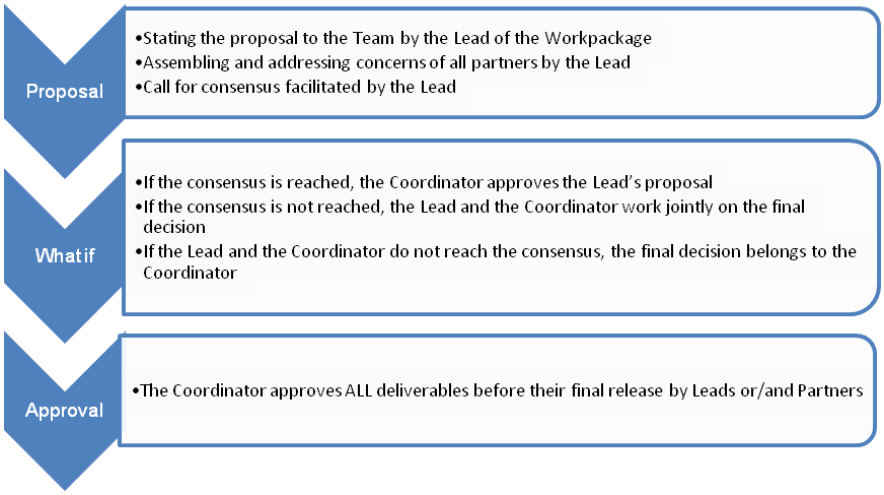
The first survey report provided an analysis of current data use practices as well as data enablers and barriers that existed in each school, and were used by each school to identify specific areas of need in terms of data use. The report analysis was an important first step in the process of establishing a school wide culture of data use and captured the schools areas of strength as well as areas for improvement under key data use categories.

On the other hand, the re-administered survey provided new datasets and displays which were used for creation of new school reports. They were made available to partners and participating schools. Also, the data analysis was repeated and the results from 2012 were compared with those from 2011 to determine changes that have taken place during the schools' participation in the project.

6. **Evaluation strategy.**

The project partners made a continued effort to evaluate the quality of the processes and deliverables as well as the impact of the project on the schools. For this purpose, a comprehensive quality plan was drafted including goals, procedures and methods as well as timelines to evaluate (1) processes within the partnership, (2) quality of the deliverables, and (3) the data use pilot course.

- Processes within the partnership were monitored by evaluating project meetings and the time between them. To evaluate the project meetings, at the beginning of each meeting the participants were asked for their expectations for this meeting and at the end it is checked if they were met. To evaluate the time between meetings, an online survey is conducted in which the participants were asked about their satisfaction as well as for problems and ideas for improvement. Results of these evaluations were published to and discussed with all project partners.
- The quality of all deliverables was monitored via an internal evaluation process which mirrored the decision making protocol:



Additionally, the main deliverables of the project (WP2: comparative analysis/state-of-the-art report, WP6: course content syllabus and course material, WP8: data coach course syllabus and data coach course material) were reviewed by an *external expert* after passing the internal review process. Jan Vanhoof, vice-chair of the ICSEI data use network was selected by all partners to provide feedback on a conceptual level.

The collaborative evaluation of the project deliverables ensured a high quality standard by triangulating views from all partners. The additional external evaluation has confirmed that the form and content delivered by the project partners were indeed of very good quality and have given additional insight on how to transform the main deliverables to an even better quality.

For the evaluation of the Using Data Course Pilot, additional procedures were put in place to ensure quality of support towards data coaches and schools:

- Every day evaluations during the data coach workshop to enable the facilitators to promptly adapt the workshop to the needs of the participants;
- Evaluation forms to be completed by the PLCs after each of the 5 phases of the Data Use Course as well as after the consultations conducted both in online and onsite mode.
- Two international online exchange sessions to collect feedback on specific content and context related enablers and barriers in the PLCs as well as to facilitate an exchange of lessons learned among them.
- Observations of the PLCs' meetings by the project partners, and providing the PLC's with face-to-face feedback based on the observations.
- Final evaluations provided by PLCs' members presented during the closing conference in Lithuania in August 2012.

All the elements of the evaluation strategy allowed for triangulation of the evaluation data, an extended, multi-level analysis of the feedback and based on the results a continued and tailored improvement undertaken by the consortium, thus adding to the highest quality of the deliverables and project itself.

7. Success Indicators

In order to measure the success of the project a set of success indicators was developed. According to the Data Use Theory of Action, data use at school links to changes in teacher practice (e.g. instruction), and changes in teacher practice lead to improvement of student outcomes. Project partners believe that the primary driver for student learning is teacher practice, and if teacher practice improves through the use of data, then student achievement

will improve. Thus, the success indicators developed by the project consortium evaluate if the following was achieved:

- The attitude of teachers to using data has become more positive;
- Data use knowledge and skills of teachers have improved;
- Teachers use data for instructional improvement more often and systematically;
- Teachers use data for school development more often and systematically;
- Collaboration in school has improved;
- Student performance has improved.

In order to measure that, a mixed method design was used. Both quantitative and qualitative data were employed (as described by Burke Johnson and Onwuegbuzie (2004)) what resulted in corroborated analysis across different approaches, thus greater confidence could be held in the conclusion. Such a triangulation assured complementarily of the results, which refers to seeking elaboration, enhancement, illustration and clarification of the results of one method with results of the other method (Meijer et al. 2002). The data gathered from different sources: the international exchange sessions, case studies, consultations held face-to-face as well as online, course evaluations, and survey results, form a more comprehensive view of the success of the project.

The analysis conducted according to the method described above proved that the project achieved a spectacular success as the indicators prove progress in all categories taken into account.

8. Dissemination and exploitation strategy

The main focus of the dissemination strategy was to ensure that the project's research and outcomes are widely disseminated to the appropriate target communities via the appropriate methods and tools. The dissemination strategy outlined all the target groups. The communication strategy was formulated based on the following structure:

- Who do we want to communicate with? – all short term and long term target groups
- What do we want to tell them?
- Why is it of interest to them?
- What do we want them to do as a result?
- What communication strategy / tool /method do we want to use?
- When do we want to communicate with them?

A number of promotional materials have been produced by each project partner in order to reach the identified target groups. A collection of news releases, flyers, publicity material and PowerPoint presentations have been prepared by all partners in their own language. Numerous presentations introducing the project have been made across the 5 countries to a total of some 14468 people. These covered the full range of long-term target groups at national and international conferences and regional training events. 65% of those events were held nationally, whereas 35% of them had an international scope. In addition, leaflets have been distributed to nearly 6000 educational professionals and published articles have reached over 2000 individuals and a further 4000 schools. The dissemination methods which were used most often included: power point and oral presentations, leaflets and networking. Finally, it is worth pointing out, that the project results' have been presented also outside of the European Union to an international research community at an international conference in Canada.

What is more, a dedicated, international conference was organized by the project consortium in Vlinius, Lithuania in order to summarize the EU DATAUSE project by providing a thorough review of the 2-years-long project implementation and to serve as a networking platform on how project serves partners' countries specific reforms. Similar conference was organized in

Poland by the project coordinator to łódzkie region school leaders and teachers as well as district and regional administrators and leaders.

The results of the comparative report, Data Use Survey results report and analysis, as well as the methodology for the data use course have been used by the project partners to work on producing several scientific articles and book chapters (e.g. a chapter in a book published by Springer based on the outcomes of the ITEM conference, a chapter in the book published by Emerald “Advances in program evaluation”, and an article in a scientific journal: Teaching and Teacher Education). Presence in these scientific materials allows for validation of the work the consortium has done. It also assures further dissemination of the project in the international body of literature.

3. Project Outcomes & Results

After two years of project implementation the consortium has produced numerous **project deliverables**, the major **of which** include:

1. **Comparative analysis report** on data use across 5 partner countries

All partners conducted case study reports which were subject to a cross case analyses. All the results were compared and contrasted and compiled into a comparative report which provided a basis for developing a Data Use Theory of Action constituting the framework for the Data Use Survey and development of the Data Use Course materials. Important outcomes of the case study indicated that **in all 5 countries school staff believe data use to be important, and that it can lead to school improvement in terms of increased student achievement**. Moreover, we found that schools declare the need for support in the use of data, and that several factors need to be taken into account in order for schools to use data effectively, i.e.: school leader support, the need for training, and the importance of teacher collaboration. The full version of the comparative report is available at the project website www.datauseproject.eu.

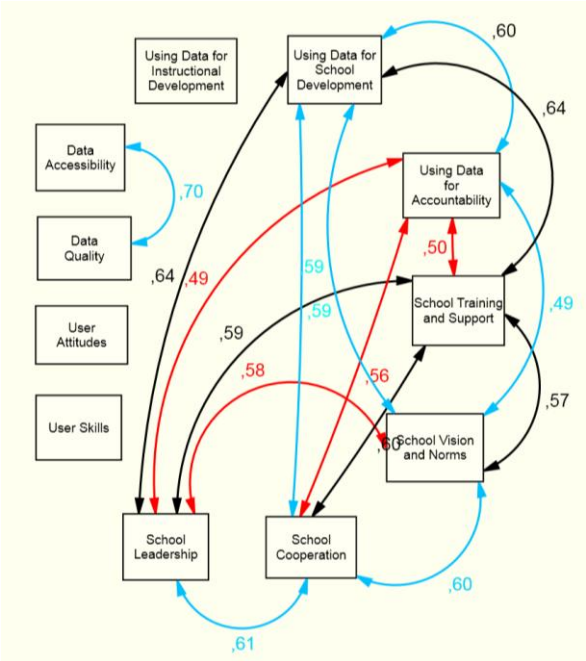
2. **Data Use Survey**

From the state-of-the-art research, a set of 78 indicators on data use were developed and later categorized according to the Data Use Theory of Action. Two surveys were conducted among schools: one before and the other after the Data Use Course implementation.
In case of the first survey, administered in 2011, it was administered to 398 recipients, in 5 countries, in 13 schools. The results of the survey for each of the schools allowed for school's self assessment and identifying the areas of strength and areas of weaknesses in each of the categories according to the Data Use Theory of Action. In 2012, the survey was re-administered through the online tool to the schools taking part in the project. In total, there were 229 recipients in 5 countries. The results allowed for the schools to determine their progress level in terms of data use during the Course.
Data Use Survey is available at the project website (www.datauseproject.eu) in 5 language versions for school leaders to gauge the extent of data use within a school and identify areas of strength and areas of need. As reported by many schools from outside of the project it proves to be an excellent tool for a school's self-evaluation and a starting point in the process of building a school-wide culture of data use.

3. **Data Use Survey results report and analysis**

Basing on the data collected through two surveys administration, two sets of reports for schools participating in the project were prepared. Those documents provided detailed statistical analysis of the surveys' results with observations and conclusions.

Observations from the first survey administration in 2011:
The results of the first survey proved the rationale for the project. Cross-country factor analysis has shown that "User Skills", "User Attitudes" and "Using Data for Instructional Development" are not pivotal categories in the data use practices in the schools proving the rationale for the project. The diagram below shows important correlations between categories from the first survey administration in 2011:



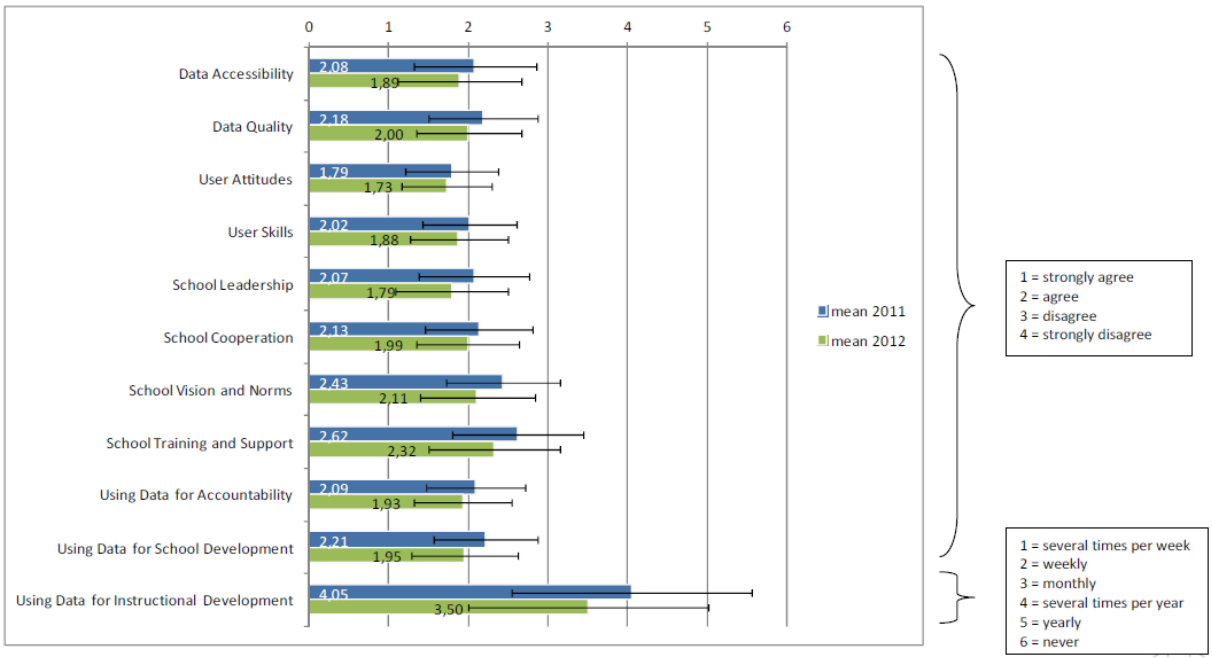
(Arrows indicate correlations between categories; higher values indicate stronger correlations; colours were chosen for visual purposes only)

The analysis showed a high level of homogeneity in responses within countries and a high level of heterogeneity between countries, which indicated that cultural/country differences in data use:

- United Kingdom: While overall ratings within the survey were very high, “Data Quality” and “School Vision and Norms” were rated comparatively lower and thus show room for improvement. Due to its correlations with other categories, “School Training and Support” was identified to be a challenging target to improve. Similarly to the cross-country results, “User Attitudes” and “Using Data for Instructional Development” did not play a pivotal role in the English partner schools, yet.
- Poland: While “User Skills” were rated very high, “School Cooperation” and “School Training and support” were rated quite low and were strongly linked in the analysis and were therefore definite targets of need. One potential key to this might lie in changes within “School Leadership” and “Using Data for School Development”. “User Attitudes” and “Using Data for Instructional Development” were no pivotal categories yet, as in the cross-country analysis.
- The Netherlands: Here, “User Skills” and “User Attitudes” were rated very high and were also influencing each other. Further areas of need were the comparatively lower rated categories of “School Visions and Norms”, “School Training and Support” as well as “Using Data for School Development”. Finally, a lack of influence was identified in “Data Accessibility, School Leadership” and “School Cooperation”.
- Lithuania: “School Vision and Norms” was one of the lowest rated categories, while correlating with very strong categories (“School Leadership” and “School Cooperation”) which indicated a need for attention. Another area of focus was “School Training and Support”. As in the cross-country analysis, “User Attitudes” and “Using Data for Instructional Development” were of no pivotal relevance, yet.
- Germany: Apart from the need to improve the overall lower ratings in all categories, a particular area of need was “School Training and Support”. A key category seemed to be “School Cooperation”. Finally, “Data Accessibility” and “Data Quality” were rated very low and linked, calling for attention. “Using Data for Instructional Development” did not play a role, as in the cross-country analysis.

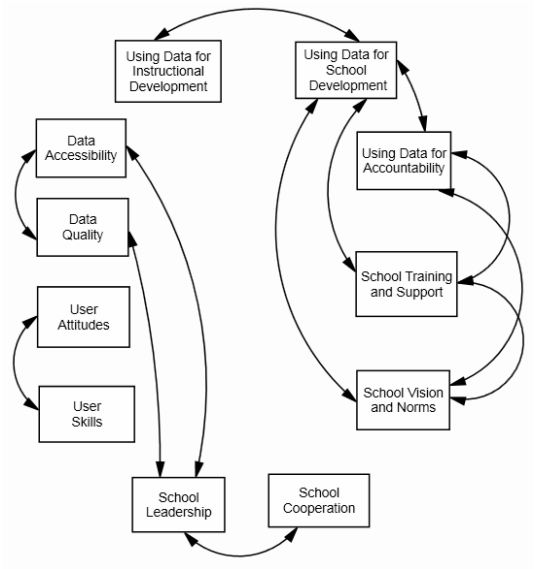
Observations from the survey re-administration in 2012:

Second administration of the survey provided results on the cross-country level and showed an improvement in all of the survey categories:



Note: In this diagram, shorter bars indicate better results.

Additionally, a t-test was administered. This test compares two samples for a difference in mean (in this case, the survey category means from 2011 and 2012). The results showed a significance level of 0.001 (2-sided) which means that the *null hypothesis* (=”means don’t change”) could be refuted and that the changes that occurred are highly significant.
The cross-country model that was calculated in the factor analysis showed that the project succeeded in targeting the previously mentioned areas of interest: “Using Data for Instructional Development”, “User Attitudes” and “User Skills”.



The new model depicts a new data use framework in the piloting schools where “Using Data for Instructional Development” correlates with “Using Data for School Development” and it also shows that now “User Attitudes and Skills” are interlinked. Another interesting change is that “School Leadership” is linked to both “Data Accessibility” and “Data Quality”. Since all of

these three categories improved, an implication could be that the integration of school leadership into the course helped improving qualitative and infrastructural bases for data use. Finally, we checked for country-specific results to determine how the course affected our pilot schools (see problematic 2011 items above).

- Poland: While School Cooperation basically stayed the same, ratings for School Training and Support improved by 0.09. Interesting changes in the dynamic of data use culture are new links (1) between Using Data for Instructional Development and Using Data for School Development and also (2) between Using Data for School Development and Accountability which could imply a stronger alliance of these different fields in the day-to-day work. The new link between the improved Data Accessibility and these two categories, and School Cooperation also indicates operational changes on the informational level.
- The Netherlands: Both previously well rated, User Skills and Attitudes further improved. Also, Using Data for Instructional Development improved by 0.05 and it is now linked to Using Data for School Development. Since all categories improved all the before mentioned weak categories show positive changes. The before not interlinked category Data Accessibility now plays an important role connecting with Using Data for School Development, Accountability and School Training and Support implying informational advantages for teachers. School Leadership now plays a role changing together with Data Quality. And finally, School Cooperation now shows a connection to School Vision and Norms.
- Lithuania: One of the weak areas with potential difficulty to improve School Vision and Norms has in fact improved by 0.16. Also, School Training and Support made progress with an increase of 0.1. User Attitudes are still not a pivotal category in the interplay of others, but Using Data for Instructional Improvement became one. Also, the dynamics of School Leadership changed and this category now connects with Using Data for School Development and Accountability.
- Germany: With its comparatively overall low ratings in 2011, Germany (in fact, one pilot school in Bremen) has managed to improve in all categories. One of the problematic categories was School Training and Support which improved by 0.18. It is now connected with User Attitudes instead of School Cooperation. Another problematic category Using Data for School Development is now also linked to User Attitudes as well as Using Data for Instructional Development and Accountability which implies that the interconnection between these areas might now work on the teacher level.

All these results provided a great basis for the analysis of the change and progress in data use in the participating schools. The analyses provided also a statistically valid measure for project success as they proved achieving the project goals as measured against the success indicators.

4. Establishment of 10 PLCs

During the project 10 PLCs were established in 5 partner countries. Each PLC consisted of 5 to 7 members including teachers of different subjects and school administrators representing various perspectives to ensure a broad view of school issues and different solving strategies.

The list of schools that participated in the project is as follows:

- Gimnazjum nr 26 im Mikołaja Reja w Łodzi, Poland
- Publiczne Gimnazjum w Wiśniowej Górze, Poland
- Harrop Fold Specialist Arts College, Manchester, United Kingdom
- Capital City Academy, London, United Kingdom
- Bonhoeffer College, Enschede, the Netherlands
- Twents Carmel College, Oldenzaal, the Netherlands
- Vilnius Gerosios Vilties secondary school, Lithuania

- Vilnius Antanas Vienuolis basic school, Lithuania
- Oberschule an der Helgolander Straße, Bremen, Germany
- Europaschule Schulzentrum Utbremen, Germany

Forming Professional Learning Communities proved extremely successful as we observed within the project that any substantial change in school requires team effort and solving complex problems requires collaborative approach. It also turned out that the teams where the person with authority was involved in the teamwork the results of the work were easily implemented and well received by the rest of the faculty. Therefore the composition of the team is of high importance in the whole process of data use.

5. **Using Data Professional Development course** in 5 language versions

The course curriculum included tools and activities that help build capacity within PLCs to establish a culture of utilizing data to inform decisions about policy, programs, and instructional practice.
The course curriculum was built up from 11 obligatory modules, with each module being delivered in an approximately 3 hour session (depending on pace, knowledge and experience of a given PLC). Modules 1 and 2 are Preparation modules that build the capacity of the PLC to engage in data work. Modules 3 to 11 take the PLC through each stage of the data use inquiry model: Discovery, Diagnosis, Doing, and Evaluation. The table below presents the topics covered by each phase of the Data Use course:

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
Optional modules	☐ Module 12: Building a data use improvement plan ☐ Module 13: Moving forward ☐ Module 14: Building a vision for data use

As an added value solution the project consortium decided to design also additional 3 modules to supplement the course with an advanced level materials allowing the schools for further development of their data use skills to improve school and student performance. They would prepare for continuing the data use work by crafting and seeking approval for a school-wide vision for data use.

After Using Data Course Pilot implementation, PCG Polska developed a revised version of course materials based on the feedback collected throughout the course pilot and based on the recommendations for improvements gathered through consultations, two international

exchange sessions, meetings with Data Coaches and partners in Lithuania during the 5th partners' meeting, dissemination conferences, and evaluations of Using Data Course Pilot implementation. PCG Polska adapted the content to the Polish market needs and expectations, as well as enriched the course with case studies on raising students' achievement in the area of Math, special education needs students' achievement and raising students' achievement in the Language and Arts area.
Furthermore, based on the course materials the project coordinator designed also curriculum structures to use the Data Use course materials flexibly to address specific needs that require improvement in various schools. The following topics were addressed in the additional curriculum structures:

- Implementation and usage of the Educational Added Value Model
- External tests results as a tool in school work planning
- Building competency in educational data analysis and interpretation
- Using data for identifying areas for improvement in schools
- Data analysis as a tool for school problems diagnosis
- Creating improvement plan for school's diagnosed problems
- School pre-external evaluation auditing

Such formula of flexible delivery of the components of the Data Use course serves schools in need of support in specific areas of the data use inquiry and improvement process.

6. Three-day Data Coaches Workshop and Data Coaches Guide

The Data Coaches Workshop was held in London on the 26-28 August 2011. Participants included Data Coaches from 10 schools taking part in the project. Coaches were led through the inquiry process using a sample dataset to make inferences and deductions from the data and identify key issues, root causes and the production of an action and evaluation plan. This prepared delegates for how they were to deliver the course in their own schools.
To support the Data Coaches Workshop, Data Coach Guide for each module was developed. Each guide encompassed a description of the module, key objectives, a list of required resources and materials, a pacing guide showing the time required to deliver each section of the module, and slide by slide delivery guidelines. The workshop materials, guidebooks, facilitator's guides and PowerPoint presentations are available in 5 language versions on the project website www.datauseproject.eu.

English partner – SSAT served with online consultations during which Data Coaches discussed course implementation status and asked for the advice in case of encountered obstacles. Apart from that, country partners were visiting and communicating with PLCs providing them with the necessary help and support in their native language. Consultation protocols (summarizing each meeting) as well as PLCs evaluation of the consultations proved that almost all aspects, excluding minor technical problems, were considered very helpful and useful. Majority of PLCs members agreed that: consultations had a clear structure, moderator led the consultation in a professional way and consultations helped them solve concerns/problems.
The model of support consisting of external consultations and advising provided by the national partners in schools' countries proved to be a very adequate formula because the external, objective perspective of consultants who could provide feedback and verify the rightness of observations and conclusions drawn by the PLC members appeared invaluable.

7. Using Data Course Pilot

The Data Use Course curriculum consisted of 11 obligatory and 3 optional modules that have been delivered from September 2011 till July 2012 by PLCs taking part in the project. In order to help schools plan piloting process, the course implementation was conducted by

a Data Coach in each PLC in the native language of the participants. The course was a combination of face-to-face meetings held within PLC members to work on the course modules as well as additional "homework" or "check-in" meetings to analyse data and work on planned exercises. Proper data collection and analysis could not be performed without engagement of the remaining school staff. Thus, collaboration within the whole school community took place as well.

Each of five phases of the Data Use Course was evaluated by PLCs looking at the following aspects:

1. Organization of course meetings, during which Data Coaches worked with PLCs on the modules implementation;
2. Organization of check-in meetings, so additional PLCs meetings used for data collection and analysis;
3. Materials and technology, including Data Coaches Guide, PLCs Guidebook and PowerPoint presentations;
4. Content of the curriculum;
5. Improvements that PLCs oversee.

According to the course evaluations submitted by PLCs each subsequent course phase was lead and organized better by Data Coaches. They were organized on time, meetings' agendas were used and most of the agenda items were covered. Those aspects were highlighted in the "Preparation" phase of the course. Thus, it can be stated that the Data Use course pilot improved school teams' organization and collaboration.
Materials and Technology used during the Data Use course implementation included numerous exercises and tables to be filled in by PLCs as well as the e-learning platform used for files exchange and communication. Here, PLC members provided project consortium with ideas and suggestions for improvements, which were taken into account and implemented in the revised version of the course materials. Most of them concerned the course structure. The content itself was assessed very well. The course overall evaluation demonstrated, that:

- Course sessions organization and implementation were successful and on time;
- PLCs showed engagement and interest in professional development and learning process;
- PLCs understood value and usefulness of the data use in instructional practice, school development, improvement and impact on students' achievements in the future.

Course Monitoring Implementation Matrix was developed in order to monitor overall piloting process, oversee possible pitfalls, decrease possible risks and give feedback to partners and necessary support for schools. The matrix collected data on each school's progress in modules implementation, status of consultations as well as submission of evaluation forms and participation in the International Exchange Sessions.

Two online International Exchange Sessions were organized aimed to share experience and challenges of the course implementation process, as well as to measure success of the course, based on settled success indicators. 19 responses were received to the questions posted in the project e-learning platform - Basecamp. All respondents evaluated the course as very useful and helpful in terms of personal attitude change towards the data, more systematic use of data in classroom and at school, better cooperation in school, and positive impact on students' attitudes towards problems they had. Teachers improved professionally – they became able to evaluate course materials and structure of course, reflect on past practice and improve it. The course materials provided opportunities for the fresh, more thoughtful and deeper look at the school problems, encouraged careful analysis of the data and rethinking of teaching /school practise, but didn't allow to share insights on change of students' performance due to the time constrains of the project. In terms of content and structure of the course, it was suggested to shorten and subsume first modules, simplify

templates, improve and adapt glossary. All the suggestions and feedback were taken into account in designing a revised curriculum of the course.

8. Website

The project website is available in 5 partner languages and provides functionality for internal project management and public access to key information about the course, its outcomes. It complements aspects of the dissemination strategy by providing a resource for both the short- and longer-term target groups to extend their knowledge of the project, and also a direct means of communication with the partners in each country in order to learn more or to take part. The list of dissemination activities performed by partners can be found there as well as all the course materials can be downloaded.

Web analytics showed that there has been a total of 4905 visits to the site; the average time per visit was 7 minutes 19 seconds and an average of 3.70 pages were accessed per visit. 45% of visitors were visiting website for the first time, while the remaining 55% were returning visitors. Visitors came from referring sites (42%), direct traffic (40%) and search engines (18%). Key words were “data use project”, “andreas breiter university”, “data use Comenius”, “datause project” and “public consulting group”. Visitors came from the UK (814), Poland (412), Germany (368), Lithuania (326), US (218), Netherlands (199), Brazil (28), Spain (26) and Russia (23). Most of the searches redirected from the English (58%), Polish (9%) and German (8%) based browsers. As anticipated, the project has had a significant increase in traffic from the moment the project entered the implementation phase and dissemination activities increased.

9. E-learning platform

The Basecamp e-learning platform (https://ssattoolkit.basecamphq.com) provided project partners, Data Coaches and PLC members with a virtual environment for communication and a resource for storing and sharing information. There were 5 levels of access: partners only; partners and data coaches; partners, data coaches and PLCs;partner, data coaches and PLCs at national level and all partners, data coaches and PLCs. All participants in the project had individual log-on access to the platform and were immediately notified by e-mail of all postings in their respective areas. Between 1st September 2011 and 31st October 2012, the e-learning platform has hosted 948 files and 480 messages.

4. Partnerships

The project consortium was composed of a multinational group of specialists with diverse areas of focus: consulting firm dedicated to public sector (Public Consulting Group (PCG Polska, Poland), university providing academic expertise on data use (University of Twente, the Netherlands), organisation oriented at raising levels of achievement in education (Specialist Schools and Academies Trust (SSAT), UK), inter-university center for continuing adult education and in-service training (Modern Didactics Center (MDC), Lithuania), and organization concentrated on research and consulting on e-government and educational technologies (Institute for Information Management, (IFIB), Germany). Each of the partners possesses miscellaneous expertise within education and consulting as well as the experience in using data in schools. Some of them have been implementing data use methodologies for a significant amount of time now, others have been engaged in a development of modern teaching and learning strategies connected with Information and Communication Technologies. The DATAUSE project partners brought their individual experience and expertise to collaboratively produce high quality courseware and tools that address the needs of schools assuring at the same time exchange of experiences.

The international cooperation of project partners at the Data Use project brought a lot of benefits both to the consortium as a whole, and to each of the partners separately. The exchange of information about the state-of–the–art in data use in participating countries was highly informative as to measuring the differences in advancement of those countries in data use. A team approach to build project deliverables enabled a cross-utilization of different but complementary professional experience and knowledge of participating organisations, which significantly contributed to the high quality of materials produced. This was revealed by the first rate organization and delivery of the Data Coaches Workshop held. Data Coaches could not only get to know the theory concerning use of data, but also exchange their cross-country experience and knowledge. Data Use course pilot implementation showed similarities and differences in the stage of and approach to the data use between PLCs from different countries. Thanks to the bi-weekly Skype calls as well as partners' meeting, project consortium was able to discuss variances in course implementation as well as improvements that should be incorporated in each language version in order to meet the needs of specific country. Highly beneficial relationships were created and sustained among partners during project meetings as well as the international dissemination activities performed.

Throughout the project implementation the consortium worked to establish closer links with target groups. The major outcomes include:

Establishment of partnerships between the project partners and PLCs in their country. Partnerships were developed for mutual benefits of schools and partner organizations. Partners learned from schools how the project deliverables can be developed to meet in a best way the needs of the PLCs. PLCs provided feedback and were involved in the project's development. They were also taking an active role in project further dissemination to their colleagues and other target groups.

Establishment of multinational partnerships between the Data Coaches during the Data Coaches Workshop. Most of the activity during the Data Coaches' Workshop was undertaken in multi-national groups. The opening session began with an opportunity for coaches to learn about key elements of each other's educational systems and a recurring theme was a comparison between the use of data and educational structures and practices in the different countries represented. This enabled coaches to establish links both with the other coaches) from their own country (many of whom had not met before) and with those from the partner countries.

Comments from coaches in their evaluations about what they had liked about the workshop included:

- very nice atmosphere/ very good presentation/ learned a lot/ international communication about practice in schools;
- getting to know about how other schools work, differences in educational systems;
- the opportunity to think about data and how important it is, that schools should be driven by data;
- the opportunity to meet international colleagues and share ideas and also get ideas from national colleagues.

Establishment of international community through the e-learning platform, international exchange of experiences forum, etc. The e-learning platform has been designed to provide coaches and PLCs with a means of developing international co-operation and the sharing of information. The Skype check-in sessions sought to encourage coaches to post information which would be of interest to colleagues elsewhere or other requests for information or advice and to then develop this as a sustainable forum for the exchange of views and best practice.

Establishment of partnerships between project partners and other institutions and individuals met during multiple dissemination activities nationally and internationally. Taking part in conferences and meetings where the DATAUSE project was promoted or discussed enabled relationship building with long term target groups, like educational leadership training institutions and organizations, district and regional administrators and leaders, research institutions, school leaders and teachers.

5. Plans for the Future

During the second year of the project, the work of the consortium concentrated on piloting the Data Use Course and project dissemination.
According to the project sustainability strategy:

- The project website will be maintained for at least three years beyond the lifetime of the project, during which time traffic to the site will be monitored;
- A data use survey, reports, course materials are available on the project website as long as the website is maintained. Any school is able to self-administer the survey and learn about its strengths and weaknesses in using data;
- The lead organization, PCG Polska reviewed the course content and developed new Data Use course curriculum adjusted to the needs of Polish schools and included it in its business offer. Moreover, PCG Polska seeks out professional development partnerships in other countries not included in the original project and is working on expanding the availability of the course to schools and regional school organizations in those countries. Project coordinator is working now on the development of the dedicated e-learning platform that will enable school teams to go through the Data Use course content in a fully online mode with interactions and animations. Such course content will be available both through desktop and tablet hardware and is a part of the DATAUSE project commercialization activities.
- The Dutch partner, University of Twente, has used the results of this project to improve their already developed data team procedure, and will further implement this in at least 37 schools.
- The Lithuanian partner, Modern Didactics Centre has introduced project results to the National Schools Assessment agency, in charge of external and internal audit of schools, has developed in-service training course that will be advertised and offered for all secondary education school teams.
- The German partner, ifib, has presented the results to national education agencies (especially in the state of Bremen) and is discussing possibilities to implement the course into teacher training programmes.Lessons-learned from the course became part of the research and body of literature related to school leadership, professional learning communities, and using data for improving instructional outcomes due to active participation of the project partners in academic events and including the experiences from Data Use project in their academic work. For example, the results of the project will be used to produce several scientific articles and book chapters (e.g. a chapter in a book published by Springer based on the outcomes of the ITEM conference, a chapter in the book published by Emerald “Advances in program evaluation”, and an article in a scientific journal:Teaching and Teacher Education).

6. Contribution to EU policies

The DATAUSE project supported the EU education policies like Lisbon, Bologna and Bergen by contributing with its innovative program to focus educators on outcomes of their work and pursuing new methods of improving the results of their work, thus better preparing their students for the dynamic knowledge-based economy and work opportunities.

The project addressed the following **Objectives of the Lifelong Learning Programme**:

- To contribute to the development of quality lifelong learning and to promote high performance, innovation and a European dimension in systems and practices in the field

The project introduced innovations to the ways that educators make decisions about staff development, resource allocation, curriculum design, and instruction. Rather than reliance upon intuition, instinct, or prescribed pedagogies for decisions, this project introduced the effective use of objective evidence (i.e. data) for decision-making. Decisions were uniquely contextualized and improvements to teaching and learning will lead to increased student achievement.

- To help improve the quality, attractiveness and accessibility of the opportunities for lifelong learning available within Member States

This project resulted in two deliverables that are designed to develop the capacity of adult learners to better lead school change. A survey which provides educators with opportunities to reflect on their practice, and the Data Use Course which provides opportunities for professional learning communities to use data to: improve the relevance of curriculum in their schools; ensure equitable access for all students to learn; and increase the quality of instruction.

The project addressed the following **Specific Objectives of the Action**:

- To develop knowledge and understanding among young people and educational staff of the diversity of European cultures and languages and its value

Diverse viewpoints and cultures are often ignored in educational environments where pedagogy and management are not guided by data about student performance, engagement, and contextual characteristics. This project provided school leaders with tools and skills to better understand their students and create opportunities for diverse cultures to be expressed in a productive and supportive environment.

- To help young people acquire the basic life-skills and competences necessary for their personal development, for future employment and for active European citizenship

Rather than relying solely on intuition or a standardized curriculum, this project empowered educators by teaching them how to leverage objective data in order to identify where students are struggling, thereby increasing the impact of their instructional strategies. School leaders learned how to determine if students are actually learning what they are being taught.

The project addressed the following **Operational Objectives of the Action**:

- To enhance the quality and European dimension of teacher training

Traditional teacher training programs rarely prepare educators to use the many sources of school and student data available to them to supplement their intuition. This project generated a professional development curriculum that serves as a template for teacher training institutions incorporating instruction on how to collect data, what data to collect, how to analyze data, how to plan for school improvements using data, and how to monitor the progress of improvement initiatives.

- To support improvements in pedagogical approaches and school management

Improvements to pedagogical approaches and school management often result from mandates or initiatives that do not take local context into account. Training school leaders to analyze, discuss, and act on their data turns every school leader into a researcher who can examine evidence, form hypotheses, take action, and measure improvement. This approach

leads to school improvements that are relevant and appropriate to each local context while also allowing for research-supported practices.
The project addressed the following **Priority**:

- School development and leadership

This project established professional learning communities in each pilot school and provided a one year training course on how to use multiple sources of data to form policy, design programs, and engage in pedagogical practices that have the intended impact on the school and on student learning. Using objective data in these ways creates a school environment where staff are held accountable and are encouraged to improve, and where students are more actively engaged in their own learning.
The project addressed the following **LLP Horizontal policies**:

- Promoting an awareness of the importance of cultural and linguistic diversity within Europe, as well as of the need to combat racism, prejudice and xenophobia

Without objective data to guide policies, programs, instruction, and student placement, it is improbable schools will be aware of the unique needs of students. Educational outcomes are influenced by language and culture, and prescribed lessons and rote teaching styles may disguise or ignore biases. This project trained school leaders how to use data to better address the unique contexts and characteristics of their students, creating learning communities that are open to diverse cultures.

- Promoting equality between men and women and contributing to combating all forms of discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation contributing to combating all forms of discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation

Student learning is frequently measured in the aggregate, where gaps in achievement between various subgroups are invisible. This can perpetuate the status quo where certain sub-groups do not receive equal access to educational opportunities. Using multiple sources of data allows educators to disaggregate student outcome data and pinpoint achievement gaps. Through action planning and progress monitoring, these gaps can be addressed with changes in curriculum, student placement, and instruction.
The project demonstrated **Complementarity with following policies**:

- Education and Training 2010 Work Programme

This project is complementary to the Education and Training 2010 programme, objective 2: improving the quality and efficiency of education and training. School leaders used data to (a) identify specific areas of student learning and identify students at risk of early leaving utilizing early warning indicators; (b) identify strategies to address student needs; and (c) make specific and effective plans for school improvement to address those needs.

- Leonardo da Vinci

Complimentarily exists with the Leonardo da Vinci Program. Analytic skills obtained through this project's Data Use Course can be applied to improve the quality of vocational training by identifying practices that produce improved student outcomes, as well as identifying areas of specific learning needs and helping educators focus on pedagogical and management improvements. More relevant and targeted instruction increases the engagement of students and the attractiveness of vocational education.