

PENNSYLVANIA CTE *Best Practices Initiative*

Implementation Guide for “Developing a Data Protocol/Framework”

Developed by the Professional Learning Community (PLC) on:
“Using Data as a Tool for School Improvement”



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Section One: Overview of BCTE Professional Learning Communities/ Using Data as a Tool for School Improvement

A. Introduction

To help expand and sustain the implementation of the strategies identified through the *Pennsylvania CTE Best Practices Initiative*¹ (BPI), the Bureau of Career and Technical Education (BCTE) and Meeder Consulting initiated five virtual Professional Learning Communities (PLCs) in 2011. Through these PLCs, administrators and other designated teacher-leaders from throughout the Commonwealth met virtually for six months to focus activity and learning around one of five overarching strategies identified in the BPI.

To further sustain collaboration and peer-to-peer learning, each PLC developed an Implementation Guide on a particular strategy element. These guides are intended to serve as practical, step-by-step resources for CTE leaders and stakeholders throughout the Commonwealth as they evaluate how to improve school and student performance.

The material presented in this guide, collected and edited by consultants from Meeder Consulting, draws upon the collective professional experience and knowledge of the Data PLC members as presented during PLC meetings and in online discussion forums. The guide captures the information and considerations that PLC members identified as being key to establishing a data protocol/framework.

B. Benefits of Using Data as a Tool for School Improvement

This section highlights some of the key benefits identified and discussed by PLC members on the basis of their own professional knowledge and experiences. These benefits apply to numerous key CTE stakeholders, including administrators, instructors, students and the community.

- Provides a basis for initiating school improvement efforts
The key steps in establishing a school improvement plan are to evaluate current performance, set goals and track progress against the goals. Analysis of data is

¹ In 2010, the Pennsylvania Department of Education's Bureau of Career and Technical Education (BCTE), with the support of the Meeder Consulting Group, launched the Pennsylvania CTE Best Practices Initiative. After conducting site visits and phone interviews with CTCs across Pennsylvania, Meeder Consulting documented 13 strategies used by CTCs to create standards aligned systems and to support those systems with people, processes and partnerships. All of these strategies are discussed in detail in case studies and profiles available on the BCTE website.

an important component of each of these steps, and it can be used as a vehicle to guide school-wide improvement efforts. In the words of one PLC member, “what gets measured, gets done.”

- Equips a school to conduct continuous and ongoing evaluation

Data provides the leadership team with a tool that can be used to explore, analyze and create strategies and goals for the entire school organization. The outcomes of data analysis can be used to take a critical look at curriculum, professional development, staff and students in an effort to move a school forward. Data provides a basis for administrators and instructors to engage in critical inquiry and dialogue about the challenges that need to be addressed in the classroom and by the school community.

While student assessment data is perhaps the most commonly analyzed type of data, it should be noted that there are other categories of data, such as student demographics (e.g., enrollment, special education status) and school environment (e.g., behavior incidents, attendance), that can provide pertinent, useful information. These sources and types of data are discussed in more detail later in this report.

- Enables instructors to “teach smarter”

Providing instructional staff with data that is relevant to student achievement serves as a starting point for data analysis. The intent of this analysis is to engage the staff to identify problems and take ownership of areas for improvement. Using data, instructors are able to identify areas in which students need to improve, and they can thereby adapt instruction and curriculum. As one PLC member commented, “Curriculum and assessments are living things—always improving and evolving.”

- Provides students with an incentive to improve

Students are more likely to gain confidence and take responsibility for their education when they are well informed about their achievements and progress toward established goals. As one PLC member stated, “Empowering students allows them to accept responsibility for their own learning. Students will find a way ‘over the bar’ so we can help them to improve by raising the bar inch by inch.” Students who develop an appreciation for the value of lifelong learning may be encouraged to further their studies.

- Helps to expand awareness and enhance the image of CTE
Sharing information about CTE student achievement levels can be an effective marketing tool for schools. Student achievement on standardized tests and certifications brings credibility to CTE and generates stakeholder buy-in and appreciation. In the words of one PLC member, “We can use data to show academic progress, that CTE students are ‘good with their heads’ as well as with their hands.” Improvement of student performance is a measure important to ensuring continued funding and can be used as a “selling point” to generate support from the community. It can also be used as a recruiting tool, in particular when targeting “high-achieving” students.

Many sources of research are available that document the value of using data as a tool for school improvement. Examples of such research are referenced in the Appendix.

Section Two: Data Protocol/Framework and Considerations

The PLC identified and discussed a wide range of data sources, considerations and processes related to using data as a tool for school improvement. In addition, the PLC examined several models of data analysis, including an evaluation model developed by the Mass Insight Education School Turnaround Group.² The PLC mapped out 11 components, or stages, in the data analysis process. They also identified three staff components that are intertwined with the data protocol. Each of these components, which are shown in Figure A, will be discussed in greater detail in this section.

² Mass Insight Education, “Evaluating School Turnaround: Establishing benchmarks and metrics to assess school turnaround,” Sept. 2010.

Figure A. Protocol for Data Analysis



1. Establish School-Wide Goals

The most effective data-driven school improvement efforts are mandatory, ongoing and school-wide. Equally important is strong administrative leadership, which can influence and “set the tone” for data analysis and goal setting. As one PLC member stated, “If data is important to administrators, it’s important to staff.”

The leadership team, along with instructors and key staff members, should meet regularly to set school-wide goals that are informed by data analysis. For example, at **Lehigh Career and Technical Institute**, performance data (such as Perkins indicators) is shared with a group of instructors. The instructors work together to review the data, select goals to work on and develop an action plan.

The overriding school goals need to be measurable and, ideally, should extend beyond standardized testing or assessment goals. In addition, they should include a range of short-term, as well as long-range, goals. In many cases, these goals are included in the CTC's strategic plan, Perkins Plan and/or "Getting Results" plan. Examples of school-wide goals at PLC members' schools include:

- Increase the number of students who score at competent or advanced on National Occupational Competency Testing Institute (NOCTI) tests (Lehigh Career and Technical Institute).
- Thirty percent of seniors will participate in co-op (Erie County Technical School).
- Average daily attendance rate will be greater than 95 percent (Erie County Technical School).
- Increase the number of industry certifications received by students by 5 percent each year (Upper Bucks County Technical School).

2. Select Indicators

Once a CTC has set school-wide goals, the next step is to identify the related indicators, or what is to be measured. For example, at **Upper Bucks County Technical School**, the assistant director maintains a "Program Data Sheet" for each CTE program. The Program Data Sheet includes the following indicators, which are used to evaluate the efficacy of a program:

- **Occupational Advisory Committee rank** is based on set criteria such as membership, quality of minutes, etc. Programs fall into one of four quartiles on the basis of how those criteria are met, with "1" being the best.
- **Average discipline referrals per student** takes into account student population per program and how many referrals that program received. The program with the fewest referrals per student based on program population would be ranked first.
- **NOCTI rank** takes into account the number of students taking the NOCTI test and the percentage of those who score competent and above (for example, 6 out of 10 would give a program a 60% success rate). Programs are then ranked from highest percentage to lowest.
- **PSC rank** indicates the number of NOCTI test participants and the percentage that received Pennsylvania Skills Certificates.
- **Enrollment rank** is based on how many eligible spaces are available in a program and the percentage of students enrolled to fill that program.
- **Percentage of completers** indicates the percentage of students who are completers and are considered graduates.
- **Cooperative education placement rank** indicates the percentage of eligible students who are employed as co-op students.

- **Average daily attendance rank** is the percentage of students who attend the program compared with the number of students who are enrolled in that program.

3. Set Benchmarks

Once a CTC has identified the indicators to track, it should establish benchmarks. Benchmarks serve as a reference point and provide a gauge for tracking progress toward school-wide goals.

At **Erie County Technical School**, administrators developed a data dashboard that lists performance criteria in the areas of curriculum design and review, student services (guidance and placement services), resource management (fiscal, technology, facilities, food services, human resources) and quality management (administrative services, internal and external auditing, improvement). Each process area has numerous performance objectives, measures and criteria, and annual performance data is shown for each.

At **Lehigh Career and Technical Institute**, administrators use a similar tool, which they call the “program data profile,” to monitor ongoing progress toward meeting their school-wide goals. This dashboard includes information on demographics, discipline incidents, NOCTI scores and other relevant factors.

4. Collect Data

There are two key steps in the data collection process: first, identify the type and sources of available data, and second, select the data that is important to track improvement and progress toward school-wide goals.

- **Types and sources of data**

PLC members reviewed the Mass Insight Education School Turnaround Group’s list of “Metrics for School Turnaround,”³ which recommends that schools track leading and lagging indicators in the following six categories:

1. **Demographic data** – *Describing the population of students served*
2. **School environment data** – *Reflecting the school climate and culture*
3. **Student achievement data** – *Measuring students’ academic achievement*

³ Mass Insight Education, “Evaluating School Turnaround: Establishing benchmarks and metrics to assess school turnaround,” Sept. 2010.

4. **Perception data** – Representing student, staff and community opinions about the school
5. **Instructional data** – Describing the teaching staff and instruction
6. **Facilities and resources data** – Capturing school resources and operations

On the basis of the Mass Insight categories, PLC members identified the following examples of the types and sources of data commonly collected by Pennsylvania CTCs:

DATA TYPES AND SOURCES		
Category	Sample Data	Sources
Demographic	<ul style="list-style-type: none"> • Enrollment by program • Percentage in special education • Special populations • Ethnicity 	<ul style="list-style-type: none"> • Pennsylvania Information Management System (PIMS) • Sending schools • CTC
School environment	<ul style="list-style-type: none"> • Attendance rates • Retention rates • Discipline incidents 	<ul style="list-style-type: none"> • Sending schools • CTC
Student achievement	<ul style="list-style-type: none"> • Pennsylvania System of School Assessments (PSSA) (eighth grade, eleventh grade) • NOCTI (pre-tests, tests) • NAEP • 4Sight • Acuity • Performance Series • Industry Certifications • Local Assessments (formative data, grades/GPA) • Sending school academic performance • Graduation rate • College attendance/remediation rates • Employment placement • Dual enrollment 	<ul style="list-style-type: none"> • Pennsylvania Department of Education • Sending schools • Testing administrators • CTC
Perception	<ul style="list-style-type: none"> • Student satisfaction • Parent satisfaction • School safety and culture • Academic expectations 	<ul style="list-style-type: none"> • Surveys of stakeholders
Instructional	<ul style="list-style-type: none"> • Instructor evaluations • Instructor certifications • Instructor portfolios • Professional development 	<ul style="list-style-type: none"> • Pennsylvania Department of Education • CTC
Facilities and resources	<ul style="list-style-type: none"> • Student to computer ratio • Revenues vs. expenses • Facility cleanliness • Safety incidents 	<ul style="list-style-type: none"> • CTC

- **Select data**

As shown above, there is a large amount of data available to CTCs. When determining which data to collect, CTCs may want to take into consideration the following points:

- What data is needed for required reporting (Perkins Plan, etc.)?
- What data is needed for tracking against benchmarks?
- What data might be useful for cross-analysis?
- How easy (or difficult) is it to obtain the data?

While each CTC may choose to collect a slightly different set of data, it is important to ensure that the same data is collected in a consistent manner.

5. Store Data

After data is collected by the CTC, it needs to be formatted and stored. At many CTCs, data is stored in several locations, depending on who will be using it. At some, all data is stored in a centralized location, often in a master database or a data software program.

Guest speaker Harry Mathias, superintendent at Central Columbia School District, gave an overview of the system that his district uses for data storage and analysis. PLC members were impressed with his ability to generate reports on student performance, classroom performance and school-wide indicators at the touch of a button. This prompted a rich discussion on the merits of a centralized repository for data. The benefits of such a system include ease of conducting cross-analysis of data and accessibility of the data to all stakeholders. PLC members indicated an interest in future research on software package options for the CTC setting.

Whether data is stored centrally or locally, it is important to establish guidelines for data ownership. For example, an administrator responsible for student behavior may own the monitoring and reporting of student attendance and suspensions.

6. Analyze Data

Most CTC administrators and instructors are inundated with data. However, based on the experience of PLC members, it seems that many simply do not have the tools—or the time—to analyze the data, which is a critical step. To paraphrase Mr. Mathias, “Assessment data needs to be analyzed and used. If not, asking students to take

assessments is a waste of time.” PLC members echoed this sentiment, commenting, “We need to use the data, not just collect it.”

PLC members identified three key steps to help CTCs in establishing guidelines for data use and analysis:

1. Determine which questions to ask

One of the points emphasized by Mr. Mathias was the importance of “getting everyone to ask the same questions.” He shared several forms, developed by Dr. Susan Bigger, superintendent of East Lycoming School District, that are used in his district’s schools to frame data analysis and set related instructional goals. For example, the following data analysis questions are suggested when analyzing primary data such as student benchmark test results:

- What percentage (and number) of students are identified in each performance level?
- What is your current goal for proficiency?
- Currently, how many students are proficient or advanced?
- How many more students are needed to make the goal?
- Identify the students in your classroom/group by performance level.

2. Determine the type of analysis needed

Depending on the questions that are being addressed by the analysis, there are many options for data analysis. The following is a sample of analysis techniques commonly used by PLC members:

- School-wide analysis,
- Program-level analysis,
- Individual student analysis (comparing multiple data points for individual students, for example: student past performance, attendance, test scores, etc.),
- Cross-analysis of multiple data sources (4Sight, NOCTI, PSSA, for example, percentage of students taking NOCTI compared to overall number of graduates), and
- Longitudinal analysis (looking at trends over time).

3. Determine frequency of reporting cycles

It is important for CTCs to implement regular, consistent and ongoing data analysis and reporting cycles. The frequency of these cycles varies from school to school and depends on the type of data to be analyzed. For example, PSSA and NOCTI scores are available annually, while other results from formative assessments can be analyzed much more frequently, such as weekly, monthly or quarterly.

Data Analysis Example:

The leadership team at **Lehigh Career and Technical Institute** conducts analysis based on data from three primary sources: the PSSA, NOCTI technical skill assessments and PIMS, which is a statewide longitudinal data system. The leadership team merges records from the various sources, using common data elements, such as the student identification number. The data-merge process allows vast amounts of data to be cross-analyzed for a more extensive look at the correlations between student and school factors and performance outcomes.

The list below provides a small sample of the type of analysis performed at LCTI:

- Compare number of NOCTI participants to program completers
- Calculate CTE hours by student and by program
- Determine retention rates by program
- Analyze the distribution of withdrawal reasons
- Compare NOCTI pre-test scores to PSSA outcomes in reading and math
- Identify the number of special education students from each sending district
- Identify the number of FRL students (eligible for free and reduced lunch) by grade level
- Sub-group data analysis (look at variations based on gender, race)

7. Share Analysis

Once the data analysis is complete, the results are typically shared internally with instructors. Administrators should be familiar and comfortable with the data before working with instructors.

Typically, school-wide data analysis results are shared with instructors at an in-service or faculty meeting. For example, at **Lehigh Career and Technical Institute**, the NOCTI pre-test data for incoming seniors is shared with instructors at a data in-service session held at the beginning of the school year. Prior to the meeting, the administrators align the NOCTI pre-test scores with the PSSA math and reading scores so that instructors can identify areas of strengths and weaknesses in each of their students.

Additional one-on-one or small group meetings may be held to review data that is specific to an instructor, program or student.

Sample questions to ask instructors when reviewing the data include:

- What does this data show?
- What jumps out at you/surprises you?
- What are the strengths/weaknesses?

8. Plan for Action

Once instructors are familiar and comfortable with data analysis, they can use the information to plan targeted instruction, provide additional support and determine appropriate classroom groupings of students.

The following questions, taken from the forms shared by Mr. Mathias, may be used as guidelines for identifying and planning for action related to student progress:

- Who are the students just below proficiency?
- Is the change from previous assessments positive or negative?
- If there is an improvement, does it appear that the speed of improvement is sufficient to meet your goals?
- Are the curriculum and instructional levels appropriate for students who fall into these performance categories?
- How many more quarters are there until the PSSA is given?
- Which students are candidates for intervention or enrichment? In which areas do they need assistance?
- Did the students identified for intervention last time have a change in their estimate scale scores? Was the change from previous results positive or negative?
- Which students (both students receiving interventions and those not) have not increased their estimated scale score significantly since the last benchmark administration?

9. Take Action

The next step in the data analysis process is to implement the action plan. This should be done in stages, with a combination of short-term and long-term actions. Recognizing quick successes on the short-term items will create momentum for longer-term actions.

10. Evaluate Progress

Once an action plan has been implemented, it is important to evaluate ongoing progress in order to continue the data analysis process. CTCs should look at both short- and long-term indicators to gauge effectiveness. In the words of one PLC member, “The weakest areas take the longest to improve. Try to find quick successes... it’s tough to sustain momentum if you are only looking at long-term goals.”

Administrators and instructors at **Erie County Technical School** regularly review and analyze numerous sources of data to track progress on CTC-wide action plans. At these meetings, they work together to develop classroom action plans and modify programs on the basis of performance data and student and parent satisfaction results.

11. Share Results with Key Stakeholders

In addition to the required reporting of performance data (such as the Perkins Plan), CTCs should consider ways to share the outcomes of data analysis with key stakeholders such as parents, partner sending schools and the community. By sharing data with a larger audience, the CTC can build awareness of its programs and student performance. The following list provides suggestions on the types of data analysis to share with stakeholder groups.

Stakeholder Group	Suggestions for Sharing Data
Parents	Share student performance results with parents via mail and/or review at conferences: <ul style="list-style-type: none"> • NOCTI • PSSA • Classroom grades
Partner sending schools	Provide reports to superintendents and sending school leaders showing their students’ performance and achievement: <ul style="list-style-type: none"> • NOCTI • Industry certifications • Behavior incidents
Business partners	Provide data that shows the impact that the partnerships are making: <ul style="list-style-type: none"> • Enrollment figures • Graduation rates • Industry certifications • Post-graduation placement
Community	Share data that “tells a story” about the benefits of CTE: <ul style="list-style-type: none"> • Industry certifications • Post-graduation placement

Staff Components

Staff involvement, training and buy-in are important threads that should be involved at all stages of the data analysis protocol.

A. Solicit Input

Educational and administrative staff should have the opportunity to provide input at various stages throughout the data analysis process. Some avenues by which input can be solicited include surveys, end-of-year interviews and faculty meetings. Giving staff members the opportunity to provide input helps to secure a sense of ownership and buy-in for the data analysis process.

B. Professional Development

In order for data analysis to become part of the instructional culture, all educators, including instructors and administrators, need to receive targeted and sustained professional learning opportunities. This can be accomplished in many ways, for example:

- Attendance at conferences and training sessions, followed by turn-around training where instructors share what they learned.
- Peer-to-peer learning through activities such as mentoring, professional learning communities and classroom observations.
- Participation in the BCTE Technical Assistance Program (TAP).
- Instructor-led presentations at faculty meetings on, for example, what worked to help students perform better on NOCTI and what did not.
- Panel of instructors to showcase best practices related to incorporating student performance results into the curriculum.

As the knowledge and expertise of instructors grows, it is more likely that data-based decision making will be implemented effectively and consistently across the CTC.

C. Ownership and Accountability

The goal of staff involvement and training in the data analysis process is to build a team of instructors that are comfortable and competent in the use of data and feel empowered to use it to make instructional decisions. As one PLC member commented, "The data analysis process needs to be teacher-driven, not just top down. We need to empower teachers to take ownership."

To help instructors develop a comfort level with data, it needs to be accessible and user-friendly. In some cases, this may mean that an administrator or “data guru” does the initial analysis and then meets individually with instructors to review the results.

To make data more manageable and accessible for staff and instructors, the administration at **Lehigh Career and Technical Institute (LCTI)** breaks the data down to a more concrete, measurable level. The leadership team shares data with instructors and trains them on how to use the data to drive their classroom instruction and to best meet the needs of their students. For example, the NOCTI pre-test data for the new class of seniors is reported to instructors at a data in-service session held at the beginning of the school year. Using the integrated data reporting system, the NOCTI pre-test scores are aligned with the PSSA math and reading scores so that instructors can identify areas of strengths and weaknesses in each of their students. Such information can be used to target instruction, provide additional support and determine appropriate classroom groupings of students. The leadership team points to this type of data-driven decision making as a key factor in helping 86 percent of students improve from the pre-test to the post-test NOCTI scores for the 2008–2009 school year.

Section Three: Additional Considerations

A. Supporting Practices

The following practices are related to supporting and strengthening the use of data as a tool for school-wide improvement. While these suggestions are geared to schools that are already using data analysis on a regular basis, many can also be applied to schools in the early stages of the implementation process.

- **Strengthening connections between partner sending schools and CTCs**
One challenge faced by many CTC administrators is data sharing with partner sending schools. When CTCs and partner sending schools work together to share student performance data, they can establish common goals and expectations. Suggestions for ways to strengthen the relationship with partner sending schools include:
 - Share student performance data with partner sending school superintendents and administrators;
 - Invite partner sending school teachers to participate in data reviews and professional development; and

- Create a plan for academic and CTC instructors to share student performance data.
- **Publicly acknowledging CTE student achievements**

One way to share the impact of data analysis with a wider audience is to showcase student achievements. This can demonstrate the impact of data analysis on student achievement while garnering support for the CTC. Examples of opportunities to publicly acknowledge CTE student achievements include:

 - Showcasing student “success stories” in local newspaper or television programs;
 - Presentation of awards at CTC “senior certificate ceremony” and/or “senior awards night”; and
 - Listing of CTC student certifications, awards, etc., in the partner sending school graduation program.
- **Incorporating local industry data into the analysis**

Reviewing and incorporating local industry and workforce data is an important next step in data analysis. Using this information, a CTC can assess how its students measure up with local and regional workforce needs. Sources of industry/workforce data include:

 - Workforce Investment Board,
 - Local industry groups,
 - Intermediate Units,
 - Chamber of Commerce,
 - Local trade associations,
 - National trade associations,
 - Career Link, and
 - Economic development corporations.

B. Ongoing Challenges/Need for Innovation

As CTCs strive to implement a protocol for analysis and use of data, there are several challenges that may need to be addressed.

- **Challenge: Building instructor comfort level with data**

While some CTE instructors may embrace the use of data, many are unfamiliar with its use as a tool.

Suggestions for How to Address Challenge:

- Make available and encourage participation at professional development/training.
 - Review program-level and student-level data in one-on-one meetings.
 - Encourage instructors to meet in professional learning communities to review data and develop action plans.
- Challenge: Tracking students post-graduation
Part of telling the story of successful CTE graduates is tracking their post-secondary education paths. Some of this information is captured in the Department of Education's PIMS system, but only for post-secondary schools that receive Perkins funding.
Suggestions for How to Address Challenge:
 - Access the National Clearinghouse. Most colleges are members of the National Clearinghouse and report enrolled students to the clearinghouse for the purpose of tracking student loan data.
 - Establish relationships with the receiving colleges. This has the added benefit of providing data regarding incoming students' preparedness for college-level work. Information about student strengths and weaknesses can be addressed through curriculum work and professional development for instructors at the CTC.

Appendix: Resources

This section contains lists and summaries of and links to reports, articles and other resources that may be useful to those interested in learning more the use of data as a tool for school improvement.

Reports, Articles and Handbooks

This section contains summaries of and links to reports, articles and other resources related to using data as a tool for school improvement.

- [Measuring Skills for the 21st Century](#)

Education Sector

November 2008

This report discusses the need for better assessments to measure the skills necessary for student success in the 21st century, including the ability to think creatively and to evaluate and analyze information. It highlights challenges to

this type of assessment, outlines essential skills and examines appropriate measures.

- [Measures that Matter - Making College and Career Readiness the Mission for High Schools](#)

Achieve and The Education Trust

November 2008

This report is broken into five sections, each containing probing questions about state and local policy that allow for self-assessment. The five sections are:

- Set a Clear Goal: Align High School Standards with the Demands of College and Careers
- Assure that Students Enroll in a Course of Study Aligned with College and Career Readiness Standard
- Provide High-Quality Curriculum and Teacher Support Materials
- Measure Student Learning: A College- and Career-Ready Assessment System
- Get Everybody Pulling in the Same Direction: An Information and Accountability System Focused on College and Career Readiness

- [Measuring Student Growth: A Guide for Informed Decision Making](#)

The Center for Public Education

November 2007

This website contains a collection of resources on the use of “growth” models for education accountability, organized primarily into these categories:

- Why are policymakers talking about growth models?
- What are the different types of growth models?
- What is needed to implement a growth model?
- What are the limitations of growth models?
- How can growth models be used effectively?

Additional references and summaries of No Child Left Behind Act growth model pilots are also included.

- [Policymakers’ Guide to Growth Models for School Accountability: How Do Accountability Models Differ?](#)

Council of Chief State School Officers

2005

This paper addresses the differences between status accountability models and growth accountability models, including research and best practices. It answers policy-related questions about the use of growth measures in accountability

systems and discusses the key technical and practical issues for implementing different accountability models.

- [Metrics for School Turnaround](#)

Mass Insight

2010

This guide details the metrics used to evaluate the efficacy of a “School Turnaround,” which is an intervention in a low-performing school that both produces significant achievement gains within two years and prepares the school for long-term transformation into a high-performance organization. As part of a larger toolkit on School Turnaround, this piece identifies six key indicators that should be evaluated and explains the necessity of a comprehensive data tracking system. To access additional tools pertaining to School Turnaround, visit [here](#).

- [Closing the Expectations Gap 2009](#)

Achieve, Inc.

February 2009

This is the fourth annual 50-state progress report on the alignment of high school policies with the demands of college and careers. It looks at five elements in each state:

- Aligning High School Standards with the Expectations of College and the Workplace
- Aligning High School Graduation Requirements with College- and Career-Ready Expectations
- Develop College- and Career-Ready Assessment Systems
- Develop P–20 Longitudinal Data Systems
- Develop Accountability and Reporting Systems that Promote College and Career Readiness

- [Involving Teachers in Data-Driven Decision Making: Using Computer Data Systems to Support Teacher Inquiry and Reflection](#)

Journal of Education for Students Placed at Risk

2005

This research study discusses teacher use of computer technologies that allow efficient organization and access to student data, helping teachers overcome barriers to the use of data. It discusses various systems, provides insight into the function of the tools and discusses conditions that make these tools of the most service to teachers. Information on collaboration and information sharing is included.

- [Survey Delves into Educators Use of Assessment Data Techniques](#)

November/December 2009

This article presents the results of a research survey done by the Office of Adult and Vocational Education (OVAE) that investigated how CTE educators use technical assessment data.

Case Studies

Researchers from Meeder Consulting conducted one-day site visits at 11 career and technical centers selected by PDE-BCTE and prepared detailed case studies based on the promising practices identified during these visits. The following list provides a quick reference to the discussion of data in the case studies. For the comprehensive summary of these practices, see the case studies at:

http://www.portal.state.pa.us/portal/server.pt/community/best_practices/7683/case_studies/794984#link5.

Central Montco Technical High School (CMTHS)

- Instructors use NOCTI pre-test data to develop individualized action plans for students to improve their performance on NOCTI assessments.

Erie County Technical School (ECTS)

- Focus on quality and use of data through ISO registration.
- Development of an analytical process to assist CTCs with analyzing students' NOCTI performance and identifying gaps.

Greater Altoona Career and Technology Center (GACTC)

- Develop processes and policies that are congruous with the ISO continuous improvement model.

Indiana County Technology Center (ICTC)

- Robust centralized records system supports all improvement efforts and simplifies data collection and reporting.

Jefferson County-DuBois Area Vocational-Technical School (Jeff Tech)

- School leaders meet regularly with each instructor to review students' scores on PSSA and NOCTI tests.

Lehigh Career and Technical Institute (LCTI)

- Perform extensive data analysis using data merged from three primary sources to determine the root causes of student outcomes.

Lenape Tech

- “Multiple Client Feedback” model uses data for planning and improvement.

Upper Bucks County Technical School (UB Tech)

- Review and analysis of NOCTI test results leads to action plans to improve student scores.

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