

13th Annual

# Thinking & Learning Conference

**BRUCE WELLMAN**

Friday 20 May

**Got Data? Now What? Creating and  
leading cultures of inquiry**

Session 2

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**MELBOURNE**

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# BRUCE WELLMAN

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Bruce is the author of multiple books on learning-focused education and collaboration, and he has written for numerous publications on organisation and professional development, mentoring, quality teaching and improving professional cultures. He has been honoured in the United States by the Education Writers Association and National Staff Development Council. He holds a bachelor's degree from Antioch College and a master of education from Lesley College.

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# Got Data? Now What?

Creating and Leading Cultures of Inquiry

Developed by  
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Co-Directors, MiraVa, LLC

## Three Common Dilemmas

- **Committee without community**
- **Time without tools**
- **Data without deliberation**



## Data-based Collaborative Inquiry

Requires and produces

- **Psychological safety**
- **Cognitive resourcefulness**
- **Relational resilience**



## Guiding Assumptions for Data-Driven Collaborative Inquiry

Data have no meaning.	Data are simply information. Individuals and groups create meaning by organizing, analyzing and interpreting data. Interpretation is subjective; data are objective. Frames of reference, the way we see the world, influence the meaning we derive from the data we collect and select.
Knowledge is both a personal and a social construction.	Human beings are meaning-making organisms. Knowledge is socially constructed and individually integrated. We sift experience through personal and social filters, forming beliefs and ways of knowing. Individuals interact with information and with others to shape new understandings from our world and about our world.
There is a reciprocal influence between the culture of the workplace and the thinking and behavior of its members.	Like societies, organizations have cultures that determine modes of behavior. Cultural artifacts, symbols and rituals reflect and transmit acceptable and unacceptable patterns and practices for individuals and groups. The introduction of new behaviors opens opportunities for testing cultural boundaries and shifting organizational norms.
Understanding should precede planning.	When confronted with data, individuals and groups often assign causality and determine solutions without clear problem definitions. They seek the comfort of action rather than navigate the discomfort of ambiguity. Skilled groups cultivate purposeful uncertainty as a pathway to understanding before jumping into planning processes.
Cycles of inquiry, experimentation and reflection accelerate continuous growth and learning.	Learning occurs when we shift from professional certainty to conscious curiosity, from isolated individual to collaborative community member, and from passive technician to active researcher. The pursuit of meaningful questions arises from thoughtful data analysis, careful problem framing, and ongoing monitoring of gaps between goal achievement and current conditions.
Norms of data-driven collaborative inquiry generate continuous improvements in student learning.	That we talk in our schools is vitally important in these changing times. How we talk may be as important. Understanding emerges from rigorous inquiry and dialogue about important matters. Such inquiry is driven by high-quality data derived from internal and external sources. Because data in and of themselves have no meaning, data alone leads to no action. Meaning and action result from collective processes that develop shared commitment to improved student learning.

# The Collaborative Learning Cycle

## Structuring Dialogue for Connection Making



## The Collaborative Learning Cycle

Productive discourse requires shape and structure. Thoughtfully designed processes increase focus, minimize distractions, and deepen exploration and analysis of data. Without such processes, group work disintegrates into excessive storytelling, over-certain and over-sold solutions, and premature rush to action spearheaded by just a few members of the group.

The collaborative learning cycle is a framework that establishes a learning forum for group exploration of data. Structured engagement with information and fellow learners ignites the processes of collaborative inquiry and problem solving. This inquiry-driven approach promotes specific cognitive processes and group member interaction in three phases.

### Phase 1: Activating and Engaging

Powerful, data-based explorations start by cultivating conscious curiosity. This first phase establishes group work conventions and shapes expectations for how the data exploration will occur. Focusing attention for collaborative work is a perennial challenge for busy educators. Readiness to explore data requires the full physical, cognitive, and emotional energy of all group members. The activating and engaging phase prepares group members for this work by eliciting assumptions about learners and learning, as those assumptions relate to the data the group is about to explore.

Groups begin with predictions and anticipations about what the data might look like prior to actually seeing any data. These predictions illuminate areas of expectation and create anticipation and curiosity. For example, a group preparing to look at a mathematics assessment might first start with blank copies of the graphs that it will be examining. During the predicting phase, members would sketch in the bars or lines of the performance bands as they envision their predictions about the actual displays. Simultaneously, members would explore and record the assumptions on which those predictions are based.

By articulating their predictions and assumptions, individuals surface their frames of reference. For group members, this interaction increases understanding of the mental models that are guiding instructional decisions and teaching practices – their own and their colleagues'. It also establishes a foundation for viewing the data in the next phase, with an advance organizer that includes the features of the math assessment that seem important in shaping the data. Distinguishing between assumptions and predictions is essential for developing shared understandings and seeing new possibilities. Stating assumptions permits them to become the foundation for a productive dialogue about what appears in the data and the reasons that this may underlie them.

### Tips for Success

- Distinguish between predictions and assumptions. What distinguishes predictions from assumptions is that predictions will be visible in the data
- Develop predictions and related assumptions concurrently. The group member who shares an assumption, should then generate a concrete prediction for how that assumption might appear in the data.
- Record predictions and their related assumptions. Use separate recording sheets or charts for this purpose.
- Record predictions on a facsimile of the data display. When possible, use a graph or chart that reflects the actual format of the data display. This recording sheet serves as an advanced organizer for viewing the data at the next phase.
- If group members do not agree on their predictions or assumptions, record more than one set of predictions and their related assumptions. The key function of dialogue at this stage is to seek to understand not to persuade. Group work bogs down when members struggle unnecessarily for consensus or engage in an assumptions debate.

## Phase 2: Exploring and Discovering

Observing data skillfully requires thoughtful process, emotional control, and mental focus. Working with data should be a learning experience. To align with that intention, it is important to attend to careful structuring of the exploring and discovering phase. Purposeful uncertainty is the guiding mindset of this phase, which is the heart of collaborative inquiry. To embrace a spirit of exploration and discovery, groups must avoid jumping to premature conclusion and closure. To remain open to possibilities and fresh viewpoints, group members must stay with the data to explore multiple storylines. This is the phase of observing, noticing, distinguishing, sorting, comparing, and contrasting.

Whatever a group's size, exploring and discovering require data teams of four or five members, each team working with shared, visually clear data displays. Larger working groups and too much data at one time lead to overload, generalization, and disengagement. During this phase, both data enthusiasts and data shy have their own challenges. For inclusive collaborative inquiry, the data enthusiasts need to act as resources, refraining from dominating their groups and interpreting data for other members. The data shy need the confidence to ask what they fear might be obvious questions about the data or the displays.

## Tips for Success

- Provide time to orient to the data displays before talking. Two to three minutes of silence equalizes the opportunity for each group member to prepare for exploring the data. This pause honors the different pacing and processing needs of individuals and produces more balanced engagement.
- Develop a sequence for exploration and designate a starting point. When multiple data sets or complex displays are on view, agreement on initial talking points saves time and energy and maximizes momentum and focus.
- Apply structures and protocols to balance participation. Deliberately structuring group work increases engagement, focus and time efficiency. For example, assigning roles, such as recorder, process checker, materials manager, and timekeeper or providing individual thinking and writing time before talking ensures access to information and opportunity to contribute for each group member.
- Establish a public recording protocol. Create common charts or recording space for observations. Keep a separate chart for questions or comments that are 'outside the phase'. For example, should conclusions or explanations surface, it is sometimes expedient to record them, rather than debate them. This process is also effective for questions that are not directly relevant to the data.
- Chart observations in language that is concise and specific. Each observation statement should communicate a single idea clearly and concisely. These statements should focus only on observable facts contained in the data without interpretation or inference. Relevant data terminology, such as mean, median, mode, range and distribution increases the precision of the observation.

### Phase 3: Organizing and Integrating

Moving from observing to understanding and then to action planning requires skillful process in the organizing and integrating phase. This third phase of the collaborative learning cycle guides the transition to formal problem finding and solving as it builds a foundation for thoughtful and detailed planning processes. This phase takes place in two stages: causation and action. Group members need to be open to multiple interpretations as to why the data look the way they do, before developing any follow up plans. Most data sets do not tell a whole story. For any explanation of causal factors to be credible, the analysis must be thoughtful and based on multiple, rich sources of information. Therefore, this phase includes collecting and considering additional data that may be indicated by the theories of causation that emerge. Confirmation builds confidence and commitment to ultimate implementation plans. Multiple voices and perspectives serve the work in each stage of organizing and integrating.

**Stage One: Causation.** In this stage, groups generate potential theories of causation. “Why did we get these results? What caused these outcomes?” Often a group member’s theory of causation is based on personal experience. For example, staff developers may tend to suggest teacher knowledge and skill as contributing factors, and workshops as a solution. Curriculum experts tend to suggest that the prime factor is lack of fidelity to the curriculum design that contributes to disappointing results. As groups extend the dialogue, surfacing a variety of causal theories, and confirming them with additional data, the deeper factors or root causes of the data emerge.

Confidence in any selected theory of causation increases when additional data sources confirm and elaborate the nuances of the theory. For example, a sixth grade team working with an expository writing assessment that reflects low student performance might decide on several causal theories to explore: (1) the writing instruction is not appropriately balanced between narrative and expository writing, (2) the reading instruction is not appropriately balanced between fiction and nonfiction genres, (3) the specific skills of vocabulary and word choice are underdeveloped, and (4) teachers lack instructional repertoire for teaching expository writing. A subset of teachers from the team could then gather further data to clarify or confirm each of these theories to refine and enrich the theory of causation that will drive the team’s action planning.

**Stage Two: Action.** Once an analysis of multiple data sources confirms a potential theory of causation, the team develops an action plan to address the cause(s). For example, “Now that we’re pretty sure it’s a balance between narrative and expository focus in reading and writing, let’s develop some outcomes, instructional scaffolds, and resources that will represent a more suitable balance.”

Effective plans call for clear outcomes, measureable criteria for progress and success, necessary action steps, data-driven monitoring arrangements for determining progress and goal achievement, assignment of responsibilities, and projected timelines.

Effectively implementing the Organizing and Integrating phase of the learning cycle builds ownership of challenges and shared commitment to actions. It increases motivation for change in practice and program. Collective responsibility for student learning is a hallmark of improving schools.

## Tips for Success

- Study success. Select an observation from the previous phase that reflects successful performance, such as an improvement trend, a high-level skill that stands out on a rubric or benchmark assessment, or a spike on a bar graph for a particular group of students. Develop causal theories for what might have produced that success.
- Generate multiple theories of causation. Use the five causal arenas as categories for stretching thinking in generating diverse explanations for observable results. Groups should intentionally develop theories in more than one area.

### Causal Categories:

- Curriculum
- Instructional methods, materials and resources
- Teacher knowledge, skills and dispositions
- Student readiness (knowledge, skills and dispositions)
- Infrastructure (time, space, student grouping, etc.)

- Seek calibrating data that are in existing archives. Given time and energy constraints, it is useful to look first to archival data to confirm, correct or clarify causal theories.
- Generate multiple theories of solution. There are no simple answers for complex problems. Successful improvement plans require multiple intervention points and interrelated approaches.
- Make sure goals are clear and measurable. It is useful to provide guidelines and criteria for goal setting to ensure that everyone understands and is ready to engage in a shared pursuit of excellence. One effective model is based on SMART goals (O'Neill & Conzemius, 2006). Smart goals are Specific, Measureable, Attainable, Results-oriented and Timebound.



# The Collaborative Learning Cycle

*Use this column to record definitions and summaries for each phase of the cycle.*

*Save this space for use in the morning.*

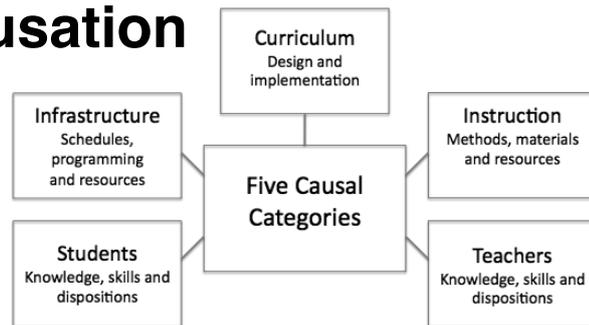
## **Activating and Engaging**

## **Exploring and Discovering**

## **Organizing and Integrating**

# Theories of Causation

Observation:



Use this space to record three possible theories of causation related to your observation:

1.

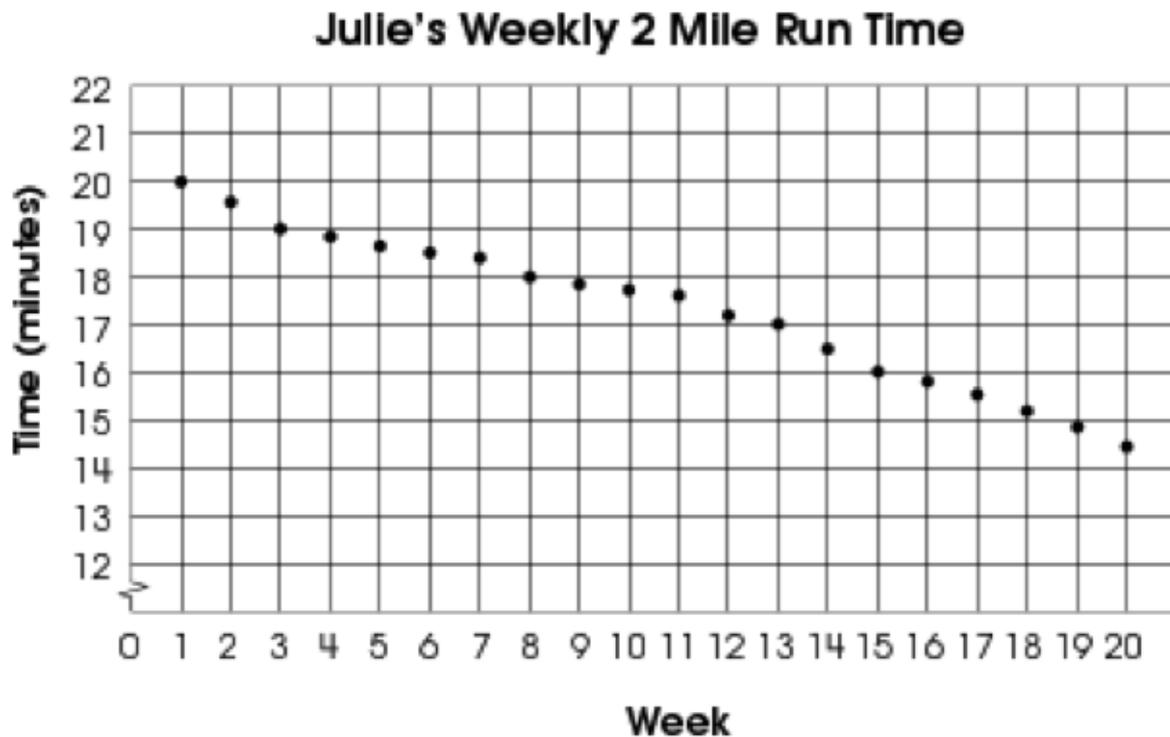
2.

3.

Circle one theory to test. In the space below, record at least three sources of data that you could use to confirm this theory.

## Grade 8: Math: Data Analysis and Probability: Question 2

Each Friday, Julie's track club runs two miles. The graph shows the amount of time that it takes Julie to run the 2 miles each week over a period of 20 weeks.



Predict and record which percentage of grade 8 students selected each answer and record the assumptions that inform your predictions on the following page.

Which answer describes the relationship between the number of weeks Julie practices and her running time?

- A. Julie is running at a slower rate each week.
- B. Julie decreases her time by about 20 seconds each week.
- C. Julie decreases her time by about a minute each week.
- D. Julie is likely to run the 2 miles in 12 minutes during the 21st. week.

## Predictions & Assumptions

Your own

The group's

# Pursuing Worthy Problems

Given all the possibilities for a group's attention and energy, the following criteria can support the decision of what issues might be work pursuing.

- **An issue recurs with frequency, year, after year.**
- **An issue is pervasive across multiple grade levels, student groups, or school settings.**
- **An issue consumes high levels of energy, time, and resources.**
- **Even after an improvement bump, performance plateaus and subsequent data flatline.**

Consider these examples:

1. For the last four years, a high school's algebra results have consistently been 35-45% lower than the language arts scores for the same students on the annual statewide assessment. Each year, members of the math team suggest various solutions for improving the results, among them: after-school homework support programs, test preparation classes, different grouping strategies, and alterations in the instructional sequence. Now, after four years, no significant improvements have occurred.

2. Across a district, there is a strong improvement trend in elementary reading scores in the primary grades. Intense professional development activities, skillful literacy coaches and innovative student grouping patterns are all credited with contributing to this success. Unfortunately in grade four and five, scores are stagnating showing little growth from year to year for the same period. Committees are searching for new teaching materials, student skills assessments are under development and longer language arts teaching blocks have been proposed.

3. English language learners are showing positive results in the primary grade mathematics. In fact, math and language arts scores are showing steady improvement gains and the achievement gap with native speakers steadily shrinking. From grades four to eight these math gains disappear with scores showing year-to-year declines as students get older. There are many conflicting theories about the sources for the fall off in performance. Some think that the causes are essentially language based, some think that it is a matter of student motivation, while others argue for expanding instructional approaches.

Each of these examples has the potential to consume considerable time, energy and resources. When the underlying causal factors are not clear, group members often lack confidence and commitment to proposed solutions. The "extra" time required to search for and clarify the root causes of problems is time well spent.

## Choosing Which Data to Collect

1. Identify something in your own work setting that you are interested in knowing more about.  
(A curriculum gap, an instructional gap, student skill deficit, student behavioral pattern, etc.)

*ex: High school student skills with reading informational text*

Your Issue:

2. To explore this issue craft examples of each of the following:

- **A problem statement:**      **The problem is.....**

*ex: The problem is* that students do not apply effective reading strategies to understand informational text.

- **An hypothesis:**                      **If.....    Then.....**

*ex: If* students are presented with multiple opportunities for guided reading of informational texts *then* students will be more successful in transferring these skills to independent practice.

- **A question:**

How are we doing with...?

What are some differences between..... and....?

Why do/does....?

What are the most productive....?

*ex: What are the essential differences* between students who are skillful readers of informational text and those who are not?

3. Determine which framing structure might be the most productive to explore (problem statement, hypothesis, or question).

4. Identify at least three data sources you might tap to gather additional information about your issue.

*ex: 1. State/Provincial and local reading assessment data. 2. Interview skillful teachers to determine which reading skills they deem to be the most essential. 3. Samples of students' written responses to informational text.*

A large empty rectangular box with a black border, intended for student responses. On the left side of the box, there are three small black dots arranged vertically, serving as bullet points for a list.

## Sources of Data

DATA	QUANTITATIVE	QUALITATIVE
<b>Student Performance Data</b>	<p>Assessment results: proficiency tests, standardized tests, exams, classroom-based tests</p> <p>Number of students receiving special services</p> <p>Report card grades</p> <p>Graduation rates</p> <p>Attendance rates, mobility rates, expulsion rates, or dropout rates</p> <p>Percentage of retentions or advancements</p>	<p>Student portfolios and work products</p> <p>Videos of student work and performances</p> <p>Exhibitions</p> <p>Student surveys</p> <p>Student journals and learning logs</p> <p>Observational records, anecdotal records, running records, checklists</p> <p>Student interviews</p>
<b>Program Data</b>	<p>Teacher-student ratios</p> <p>Number of students enrolled in various programs</p> <p>Teacher and administrator education statistics</p> <p>Teacher participation in professional development</p> <p>Budget and resource allocations</p>	<p>Videos of special events, classrooms and hallways.</p> <p>Meeting agendas, minutes and memos</p> <p>Teacher and administrator portfolios</p> <p>Artifacts like awards, and photos of bulletin boards</p> <p>Staff interviews</p> <p>Workshop and training program agendas and evaluations</p> <p>Bulletins and newsletters</p>
<b>Community Data</b>	<p>Data on family demographics: average income, percentage of single-parent families, percentage of two-income households</p> <p>Number of school and business and industry partnerships</p> <p>Employment rate; employment sectors in the area</p>	<p>Focus-group data</p> <p>Opinion surveys</p> <p>Interviews with parents and community members</p>

## Scaled Group Inventory

Quality	Questions for Groups	Scale: 1–4 (Rarely to Always)
<b>Maintain a clear focus.</b>	Are we clear about our desired results in both the short and long term?	
	Do we have clear and shared criteria for determining success?	
	Do we have strategies for getting back on track if focus is lost?	
<b>Embrace a spirit of inquiry.</b>	Do we ask questions for which we have no immediate answers?	
	Do we search for and honor other perspectives?	
	Are we willing to ask questions that might cause discomfort?	
<b>Put data at the center.</b>	Do we use data to calibrate and inform our conversations?	
	Do we use multiple types and sources of data to add to our thinking?	
	Do we have methods for ensuring shared understanding?	
<b>Honor commitments to learners and learning.</b>	Are our conversations student centered?	
	Do we continually assess our current learning goals (for students and for ourselves as a group)?	
	Do we set meaningful goals for our own learning as a group?	
<b>Cultivate relational trust.</b>	Do we clarify and communicate high expectations for ourselves as a group?	
	Do we make it safe not to know?	
	Do our actions reflect our commitments?	
<b>Seek equity.</b>	Do we use structures and protocols to ensure balanced participation?	
	Do all group members have an equal voice?	
	Do we challenge our own preferences and judgments in order to consider other ideas?	
<b>Assume collective responsibility.</b>	Do we believe that our collective action makes a greater difference for student learning than our individual efforts?	
	Are we willing to be answerable for the choices we are making?	
	Do we push past <i>good enough</i> to continually challenge ourselves?	

## Self-Assessment Inventory

### Maintain a Clear Focus

1. Am I clear about our purpose? \_\_\_\_\_  
\_\_\_\_\_
2. Is this comment or contribution contributing to our purpose? (Do I really need to say this?) \_\_\_\_\_  
\_\_\_\_\_
3. Should I refocus the group at this point? \_\_\_\_\_  
\_\_\_\_\_

### Embrace a Spirit of Inquiry

1. Am I asking questions to which I have an answer? \_\_\_\_\_  
\_\_\_\_\_
2. Am I open to the influence of others' perspectives? \_\_\_\_\_  
\_\_\_\_\_
3. What might I be avoiding or leaving out? \_\_\_\_\_  
\_\_\_\_\_

### Put Data at the Center

1. How do these data influence my thinking and comments? \_\_\_\_\_  
\_\_\_\_\_
2. What other sources might add to our thinking? \_\_\_\_\_  
\_\_\_\_\_
3. What don't I understand at this point? \_\_\_\_\_  
\_\_\_\_\_

### Honor Commitments to Learners and Learning

1. How do I keep learning as the priority? \_\_\_\_\_  
\_\_\_\_\_

2. In what ways am I achieving my current goals in my classroom and with my group? \_\_\_\_\_  
\_\_\_\_\_
3. What new goals might I set for my own learning? \_\_\_\_\_  
\_\_\_\_\_

### **Cultivate Relational Trust**

1. What makes me feel safe or not in this group? \_\_\_\_\_  
\_\_\_\_\_
2. How am I making it safe for others? \_\_\_\_\_  
\_\_\_\_\_
3. Am I following through on my commitments? \_\_\_\_\_  
\_\_\_\_\_

### **Seek Equity**

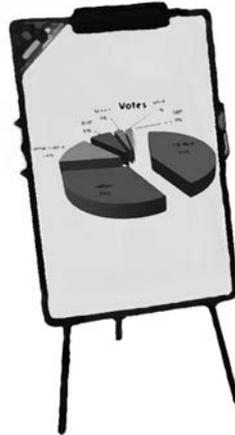
1. Am I talking too much? Too little? \_\_\_\_\_  
\_\_\_\_\_
2. Do others have space to share? \_\_\_\_\_  
\_\_\_\_\_
3. Am I able to set my own preferences and judgments aside to consider others' ideas? \_\_\_\_\_  
\_\_\_\_\_

### **Assume Collective Responsibility**

1. How am I demonstrating my investment in this group? \_\_\_\_\_  
\_\_\_\_\_
2. How is my participation affecting others in the group? \_\_\_\_\_  
\_\_\_\_\_
3. In what ways are the connections and linkages between my work and my colleagues' work making a difference for students? \_\_\_\_\_  
\_\_\_\_\_

# Meeting Partners

Make an appointment with 4 different people - one for each image.  
 Be sure you each record the appointment on your page, by writing your partner's name in the appropriate space.  
 Only make the appointment if there is an open slot at that spot on each of your forms.



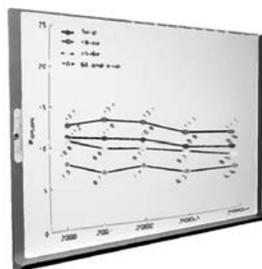

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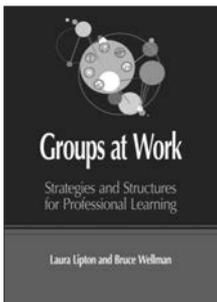




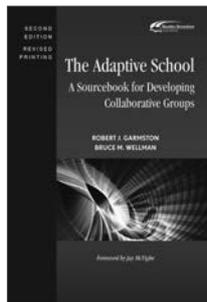
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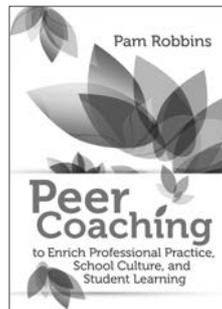
Qty	Code	Title	Price
	CFAS5053	Adaptive Schools Foundation Seminar Learning Guide, Second Revised Edition	\$44.95
	TCP4193	Designing Groupwork: Strategies for the Heterogeneous Classroom, 3rd Edition	\$29.95
	MRV7385	Groups At Work: Strategies and Structures for Professional Learning	\$42.95
	115014	Peer Coaching to Enrich Professional Practice, School Culture, and Student Learning	\$36.95
	CG1390	The Adaptive School: A Sourcebook for Developing Collaborative Groups, 2nd Edition	\$49.95
<b>Total (plus freight) \$</b>			



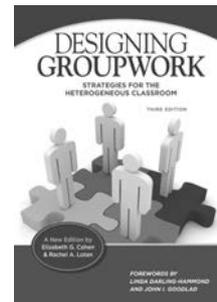
MRV7385



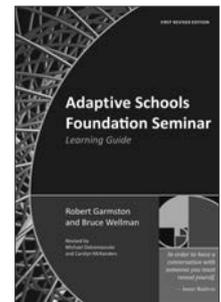
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