

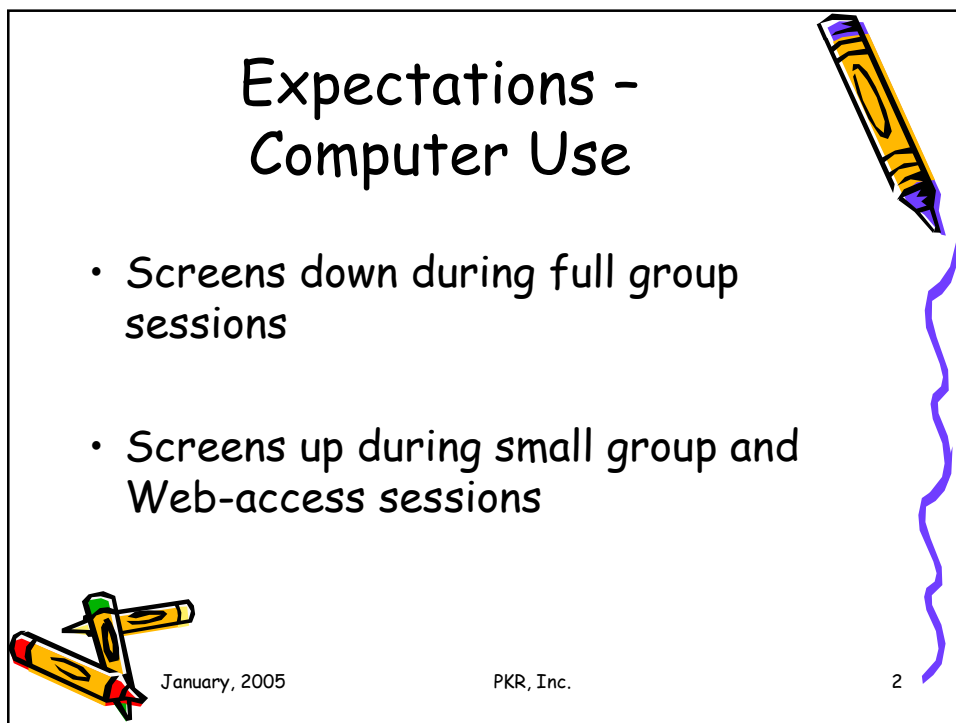
# Measurement, Analysis, and Knowledge Management

Part II: Choosing Research-Based  
Instructional Strategies

Leddick and Edwards for SQS

## Expectations - Computer Use

- Screens down during full group sessions
- Screens up during small group and Web-access sessions



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## Purposes of the Workshop

- *To strengthen the quality of instructional strategies that address specific learning problems.*
- *To capitalize on existing knowledge and practice in the field of education.*
- *To give practical assistance to teachers leading colleagues in the use of data and research to improve student learning.*

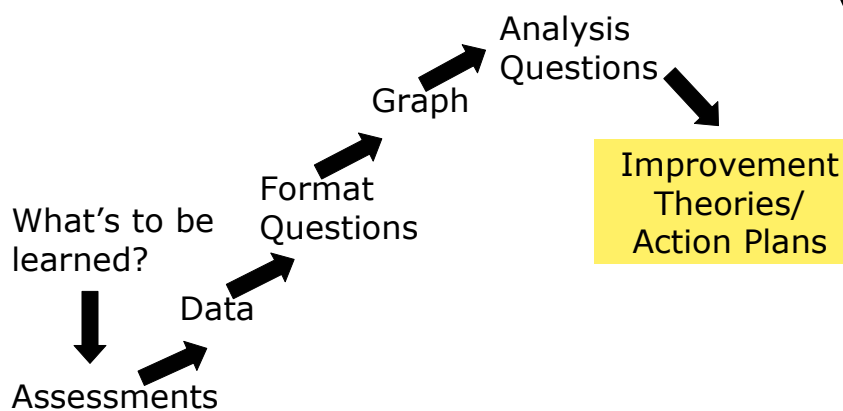


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## The **BIG** Picture



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## Agenda Check

- *Why theory matters*
- *What "research-based" means and why we need to know*
- *Marzano's research-based framework (one practical example)*
- *Sharing and describing learning problems identified through data reviews*
- *Process for reviewing alternatives...and practical research sources*
- *Applying the process to team data*
  - *Setting up the review*
  - *Ready to use the WEB as a resource*
- *Next steps...assignments and applications*



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## Choose Team Roles

- Timekeeper (keeps track of time & gathers resources)
- Facilitator (keeps work on track; involves all members)
- Recorder (writes notes; records plans)
- Reporter (speaks)



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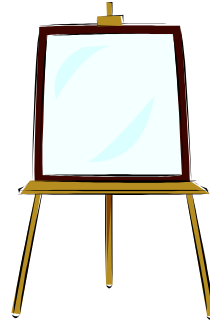
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## Group Check-In

- What student learning needs emerged from your review of formative data? (Subject areas; subgroup gaps?)
- What did you learn about using data with your faculty during the data review?

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## Why Theory Matters



"There is nothing so practical as a good theory."

- George Box  
Statistician



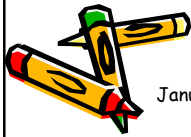
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## NCLB's Focus

- 111 references to "scientifically based research"
- Clear intent in policy
- Analogous to medicine
- Roots reach back to 1690 in educational theory



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- "...a beating human heart..." (1940's)
- "The bottom line here is these same rules about what works and how to make inferences about what works, they are exactly the same for educational practice as they would be for medical practice. Same rules, exactly the same logic, whether you are talking about a treatment for cancer or whether you're talking about an intervention to help children learn. The same logic applies." (V. Reyna, OERI, 2003)



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## Urgency!

- Knowledge economy
- Computer technology
- Knowledge explosion
- Perception of system failure



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## Drucker's Observations (1994)

- "...an economic order in which knowledge, not labor or raw material or capital, is the key resource"
- "... [Knowledge workers] require a good deal of formal education and the ability to acquire and to apply theoretical and analytical knowledge. They require a different approach to work and a different mind-set. Above all, they require a habit of continuous learning."



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## Drucker's Prediction (1994)

Education will become the center of the knowledge society, and the school its key institution. What knowledge must everybody have? What is "quality" in learning and teaching? These will of necessity become central concerns of the knowledge society, and central political issues. In fact, the acquisition and distribution of formal knowledge may come to occupy the place in the politics of the knowledge society which the acquisition and distribution of property and income have occupied in our politics over the two or three centuries that we have come to call the Age of Capitalism.



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## Barriers to Use of Research To Guide Practice

- Shortage of rigorous research studies
- Complexity of interdependent variables
- Sheer volume of information



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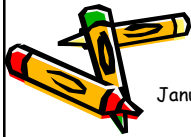
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## ➔ Your Experience

- How have you tried to use research at your school?
- Challenges?
- Successes?



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## "Research-Based" The Legal Definition

- Facilitators, lead your team through the definition on page 6 (top).
- Focus on understanding the main ideas.
- Recorders, take down questions and terms that cause difficulty.

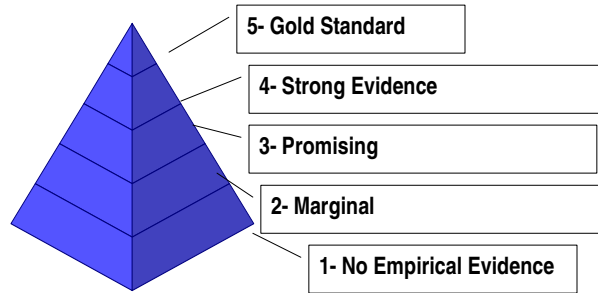


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## What "Research-Based" Means: 5 Quality Levels



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## Check for Understanding

Match each of the five examples with the five levels of research quality that appear on page 6. Be able to justify your answers.



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## Ten Instructional Practices that Work

- Meta-analysis
- Any subject area, any grade level
- What do research-based strategies look like in practice? (Pages 8-9, plus article)

Notice the assignment, p. 9.



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## A Better Marzano Source

Classroom Instruction That Works  
(2001). ASCD.

Also, study guide and handbook for implementation. All available at

[www.ascd.org](http://www.ascd.org)



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## And One More...

Marzano, R. Building Background Knowledge (2004). ASCD.

...about vocabulary instruction.  
Contains nearly 8,000 terms  
extracted from standards; organized  
by grade level and subject area.



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## Marzano's Framework

- "Research is not a collection of ready-made answers...resource that can provide direction and substance... purpose and caution."
- Marzano's three factors...eleven examples ...proposed action steps




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## Marzano's Most Powerful Factor

- **A guaranteed and viable curriculum**
  - Identify and communicate the essential content for all students.
  - Ensure that essential content can be addressed in available instruction time.
  - Sequence and organize essential content to give ample opportunity for learning.
  - Ensure that teachers address the essential content.
  - Protect the available instructional time.



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*A Good Start*

23

## Share and Classify - I

- Your team only
- Describe one learning problem you encountered (Use the prompts.)
- Identify key words you could use to guide your research inquiry



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## Share and Classify - II

- Work with another team.
- Compare descriptions.
- Similarities and differences?
- Reciprocal learning opportunities?



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## The Matter of Relevance

- Consistent with learning theory - "theory of the program"
- Causal vs. descriptive (experiment vs. survey)
- Situation matches yours (replicability)



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## Process for Reviewing Research Alternatives

1. Define student learning challenge & situation.
2. Scan research reviews for basic elements.
3. Identify promising options.
4. Choose option(s) to test.



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## Practical Research Sources

- National Education Labs
- Clearinghouses and Program Research Reviews
- State Departments of Education
- Colleges and Universities
- Independent Organizations
- Corporations
- Peer-Reviewed Journals



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Refer to p. 11 Handout

## Application

- Define student learning challenges and current situation as described in Step 1, page 11.
- Develop a system for integrating research-based strategies into your school's response to the learning problems you find when you use formative data on your goal of choice.
  - What's the role of the goal teams?
  - When and how do you plan to engage the entire faculty?
  - What would an annual timeline look like?
  - What's the timeline from now to year-end?



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## Pair Share

- Get together with one other team and compare the processes you developed.
- Be ready to report one similarity and one difference.



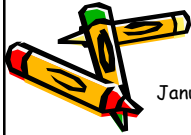
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## Next Steps

- Complete the task at the bottom of page 16.
- Bring detailed records on your research-based theory test to next session. (One per teacher; one per school.)



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## Wrap-Up

Plus (Helpful)	Delta (Missing or Not Helpful)



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