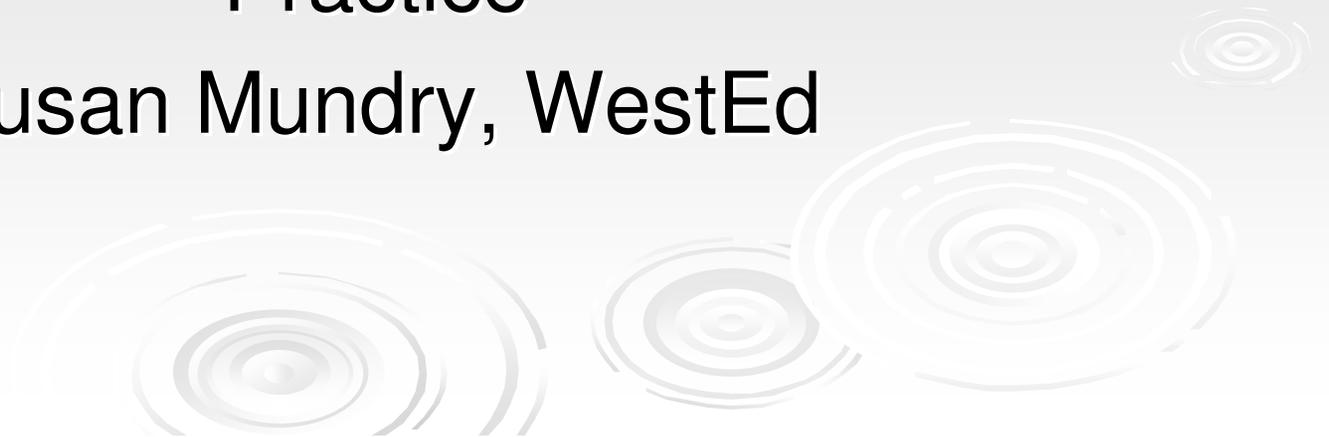
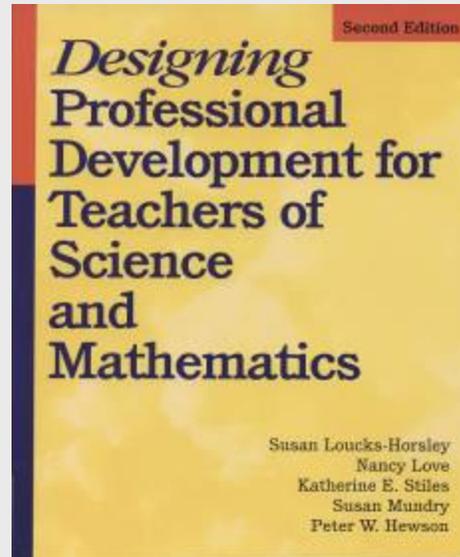


# **Making the Case for Effective Professional Development**

Lessons from Research and  
Practice

Susan Mundry, WestEd





***Designing Professional Development for Teachers of  
Science and Mathematics, 2<sup>nd</sup> Edition, 2003***

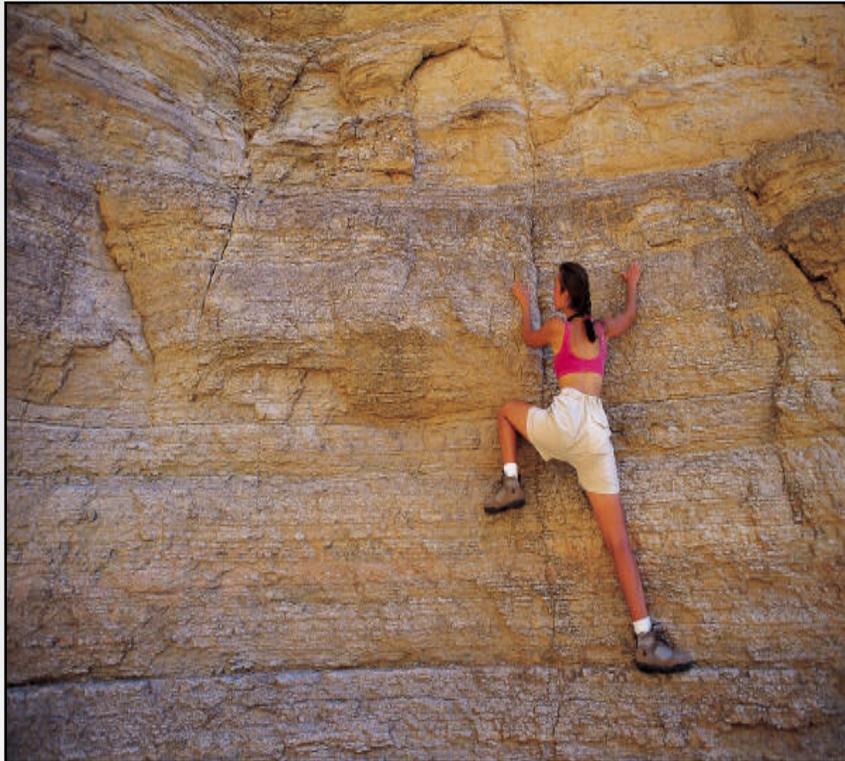
**Susan Loucks-Horsley, Nancy Love, Katherine E. Stiles,  
Susan Mundry, Peter W. Hewson**



# Teaching Matters—A Great Deal

- Experienced teachers produce higher achievement outcomes (Rowan, Correnti, & Miller, 2002).
- Teachers make the difference even for students from disadvantaged backgrounds (Wenglinsky, 2002).
- Students who are taught by several ineffective teachers in a row perform worse than similar students taught by several effective teachers in a row (Sanders & Rivers, 1996).

# Powerful Learning



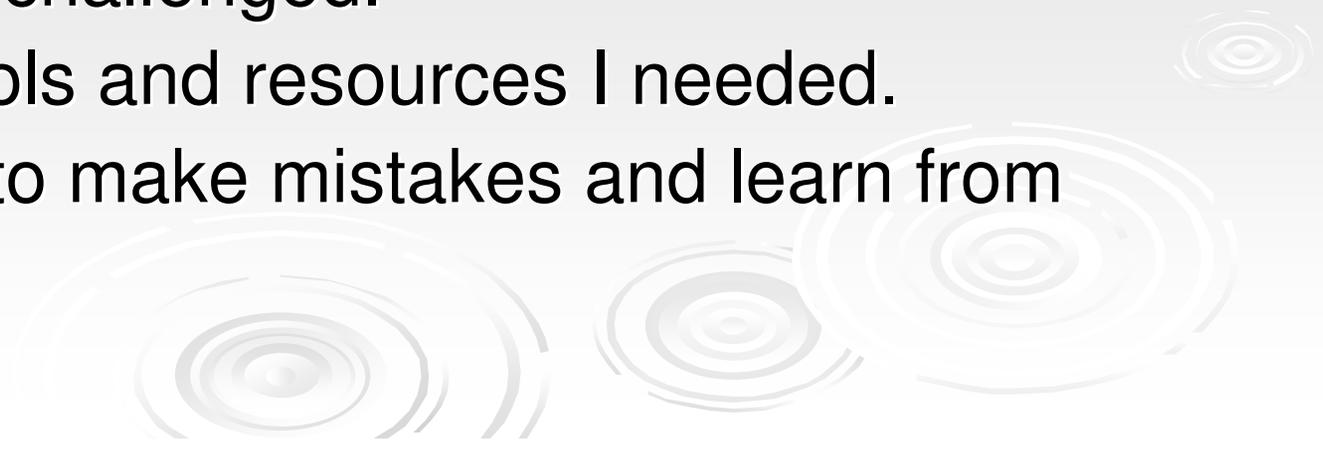
➤ Think about a powerful learning experience you've had.

- What did you learn?
- Who else was involved?
- What made the experience powerful for you?

# Getting the Group's Attention

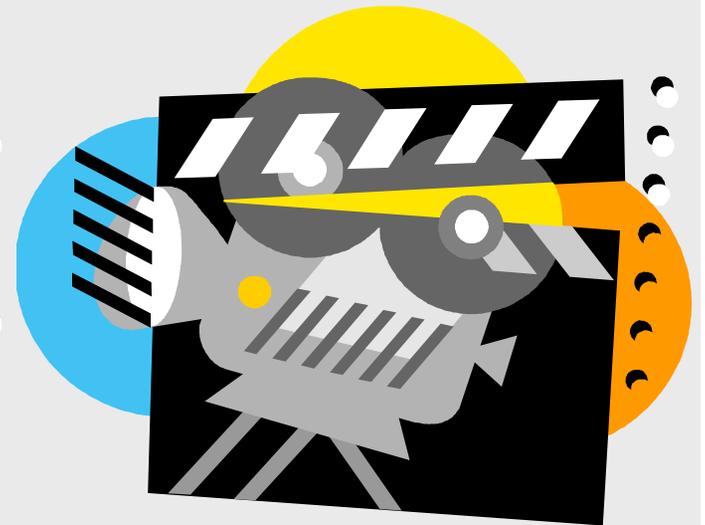


# Powerful Learning

- It was meaningful and relevant.
  - I was committed.
  - Appealed to emotion.
  - An experienced person mentored me.
  - It was fun and engaging.
  - I was really challenged.
  - I had the tools and resources I needed.
  - It was safe to make mistakes and learn from them....
- 

# Video Example

- In what ways was this a powerful learning experience?
- Who contributed to it being a powerful learning experience?
- What did they do?
- How does this example relate to teacher professional development?



# Research in Three Key Areas



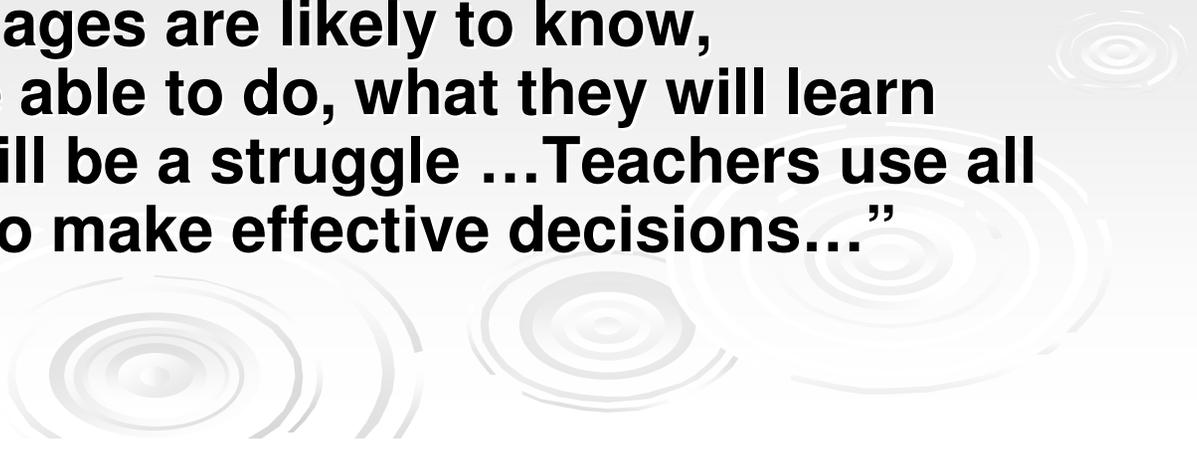
- ✓ Essential **Content** for Professional Development
- **Features** of Effective Professional Development
- **Leadership** for Professional Development

# Teacher Learning: Focus on Content and How to Teach It

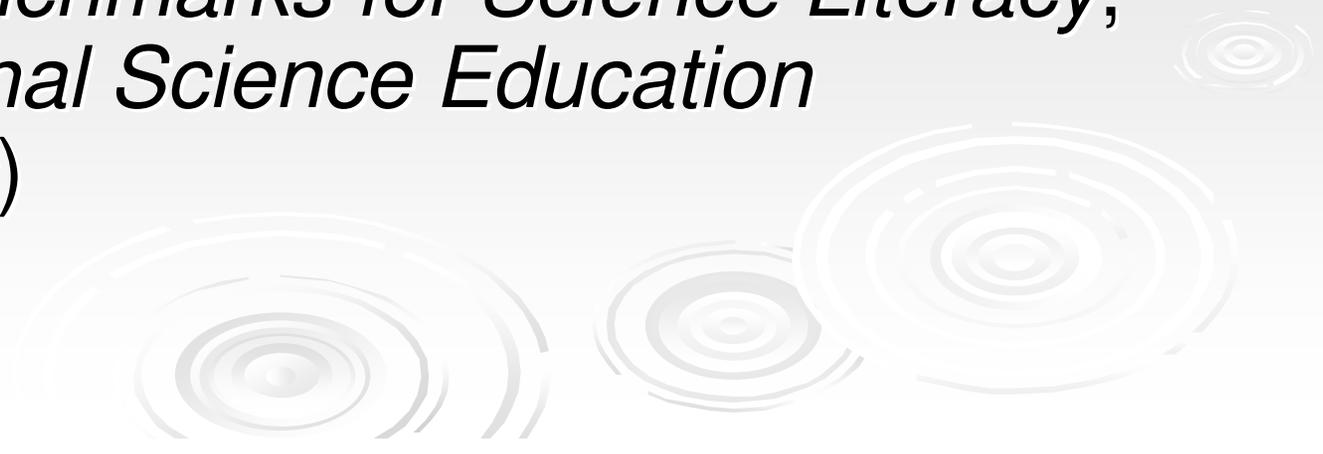
- Greater positive effects on student learning are seen from in-service programs that focus on content knowledge and on how students learn subject matter (**Cohen & Hill, 2000; Kennedy 1999; Wiley and Yoon, 1995**).



# Science and Pedagogical Content Knowledge and Skills

- **“Teachers must...be skilled in helping students develop an understanding of the content, meaning that they need to know how students typically think about those ideas, and how to help students deepen their understanding” (Weiss et al, p. 28).**
  - **“Effective teaching requires that teachers know what students of certain ages are likely to know, understand, and be able to do, what they will learn quickly and what will be a struggle ...Teachers use all of that knowledge to make effective decisions...” (NRC, 1996, p. 62)**
- 

# What Teachers Need to Know: Science Content

- What a **scientifically literate adult** should know (See *Science for All Americans*)
  - The **concepts and specific ideas** in their curriculum that students in their **grade span** will learn (See state standards, *AAAS Benchmarks for Science Literacy*, and *National Science Education Standards*)
- 

# What Teachers Need to Know: Pedagogical Content

## ➤ Research on student learning

- what children of certain ages are capable of learning and doing and what makes the learning some topics difficult (See *Benchmarks; Making Sense of Secondary Science* by Driver et al).

## ➤ Instructional strategies that support learning

- **assessing** prior knowledge and having strategies for representing topics to make them comprehensible to diverse learners (See curriculum materials, *NSES, Benchmarks*).



# Window of Intentionality

	Don't Know	Know
Can't Do	Miracle	Theory
Can Do	Magic	Intentionality

*Source: Adapted from: Mentoring: A Resource and Training Guide for Educators. Stoneham, MA: Learning Innovations at WestEd*

# The Continuum of Professional Development



- Beginning Teachers – Build
- Experienced Teachers – Deepen
- Accomplished Teachers – Contribute



# Research in Three Key Areas

➤ Essential **Content** for Professional Development



✓ **Features** of Effective Professional Development

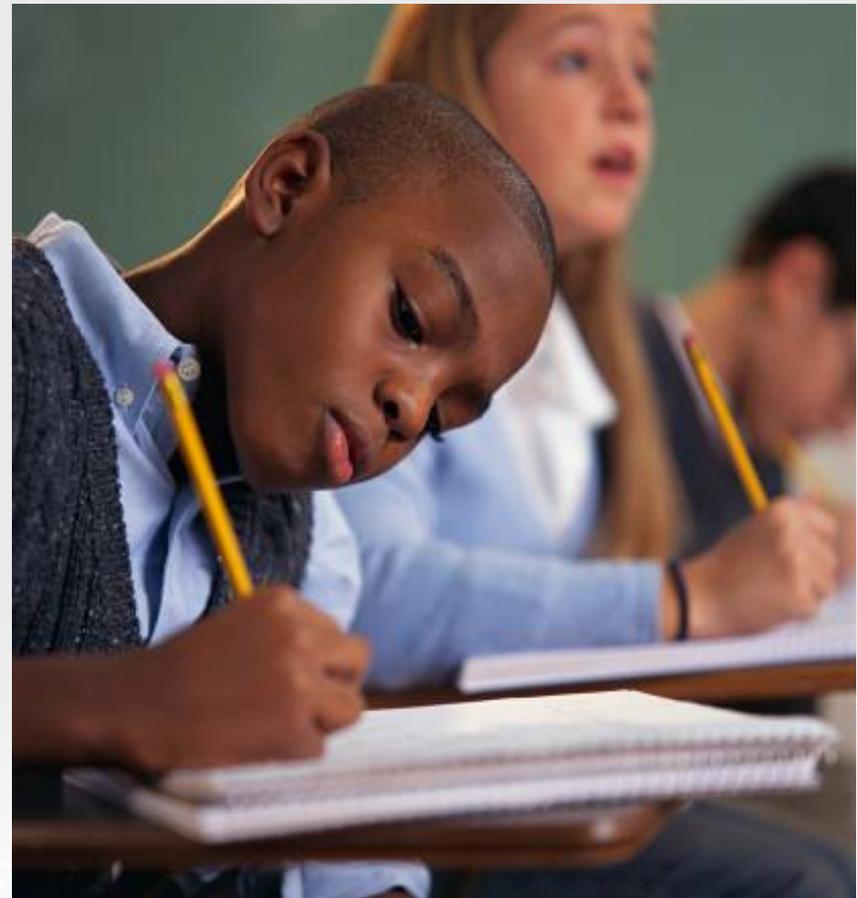
➤ **Leadership** for Professional Development

# Features of Effective Professional Development

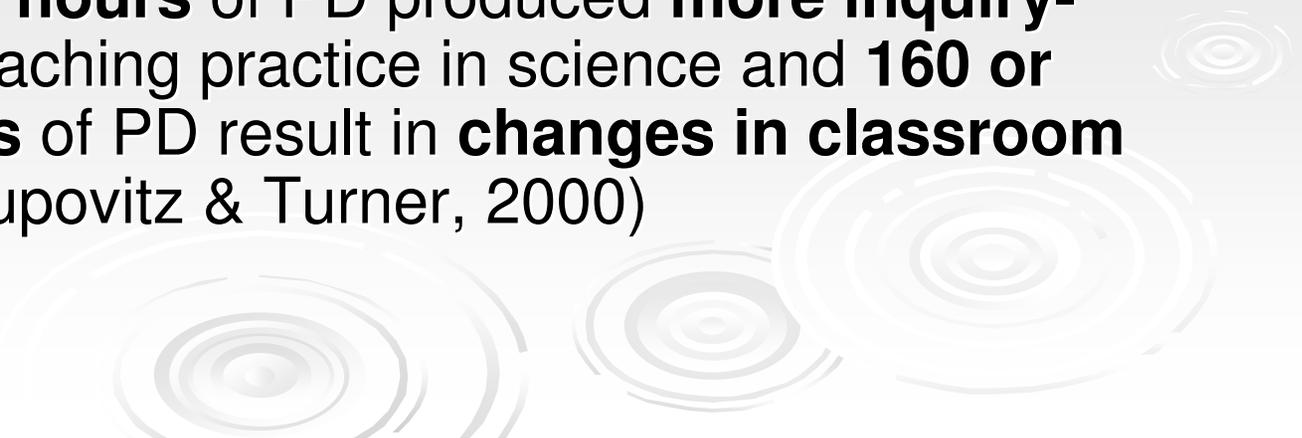
- Clear and challenging goals tied to student learning
  - Adequate time, follow-up and continuity
  - Coherence
  - Active, research-based learning
  - Critical reflection on practice
  - Evaluation of results
- 

# Clear Challenging Goals Tied to Student Learning

- Purpose of Professional Development is Student Learning.
- Must Communicate:
  - What is the purpose for your PD?
  - How will instructional practice change?
  - How will student learning be enhanced and improved as a result?



# Adequate Time, Follow-up and Continuity

- Professional development that is **sustained over time** and **focused on teachers' practice** is more closely linked to improved student learning. (Birman et al, 2000)
  - Teachers with more than **8 hours** of PD were more likely to report **changes in practice**. (NCES, 2000)
  - **80 or more hours** of PD produced **more inquiry-oriented** teaching practice in science and **160 or more hours** of PD result in **changes in classroom culture**. (Supovitz & Turner, 2000)
- 

# PD: Initiation to Implementation to Refinement

## ➤ Establish Purpose

- Review student learning data and results
- Conduct Overview/Awareness Meetings
- Establish leadership support.

## ➤ Initial Use

- Workshops and demonstrations focused on the instructional materials and practices and how to use them followed by try out in the classroom.

## ➤ Deepen Content and Pedagogical Content Knowledge

- Content courses or workshops on the content in the curriculum; study groups reading standards and research on learning.

## ➤ Mechanical Use

- Teachers meet, observe demonstration lessons and have coaching to solve problems and refine instruction.

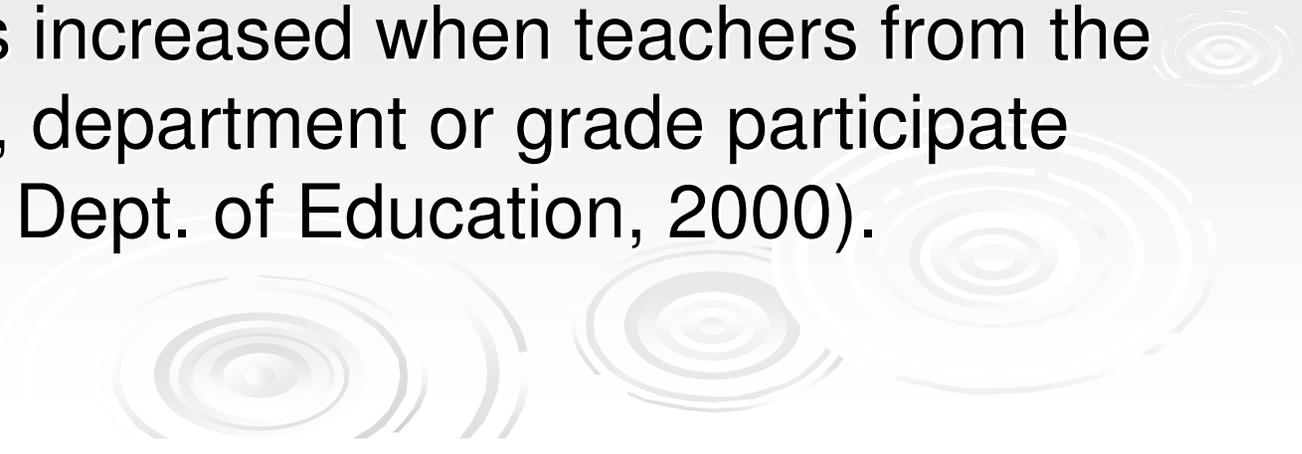
## ➤ Examining Student Work

- Teachers examine children's ideas, spot misconceptions and decide next steps, further deepening their pedagogical knowledge.

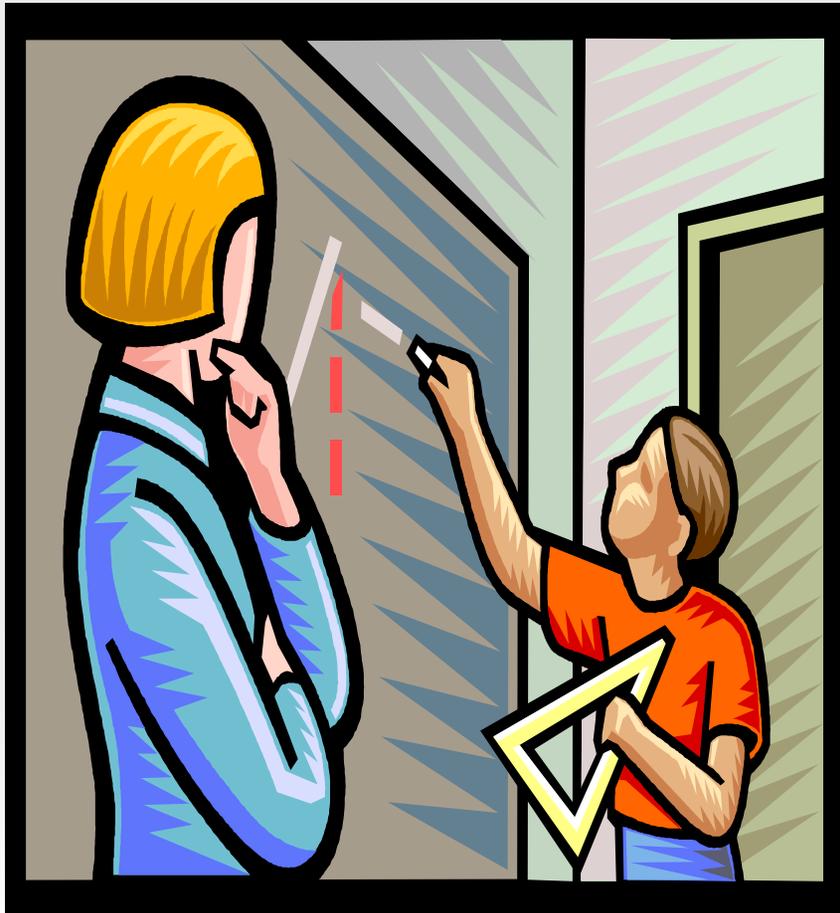
## ➤ Refinement/Routine Use

- Teachers study and make refinements in lessons based on their use and student results. Evaluation results are used to decide next steps.

# Incoherence=Low Impact

- A reform initiative's chances for positive impact are increased when it reduces the number of short term, unfocused projects, programs and initiatives and focuses on clear goals for teacher and student learning (Newman et al, 2001).
  - Avoid "Islands of Innovation."
  - Coherence is increased when teachers from the same school, department or grade participate together (US Dept. of Education, 2000).
- 

# Active, Research-based Learning

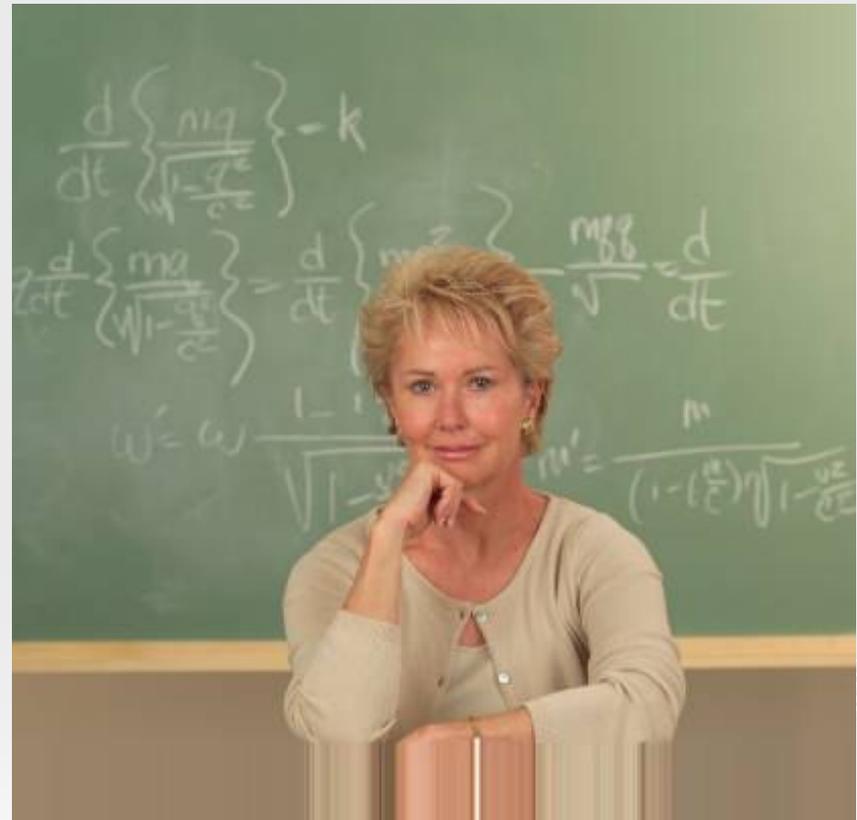


- Knowledge-centered
- Learner-centered
- Assessment-centered
- Community-centered

Bransford, J. et al, (1999). *How people learn*. Washington, DC: National Academy Press.

# Critical Reflection on Practice

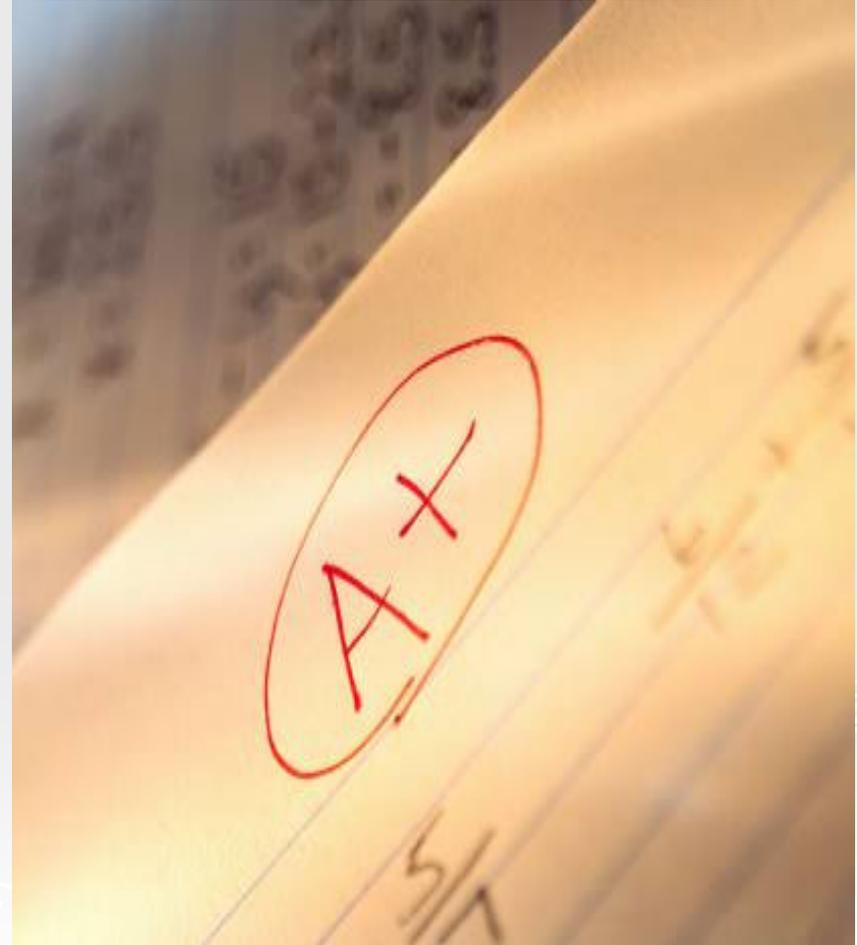
- Teachers examine and critique lessons, student work, and classroom case studies (video and print).
- Teachers have time and structures for professional dialogue and to reflect on their practice.
- Teachers read and discuss educational research and standards.



# Evaluation

- Data on teacher learning, changes in practice, and student learning outcomes are used to evaluate the effectiveness of the professional development and make adjustments as needed

(Guskey, 1999)



# Video Example



**What evidence do you see of effective professional development?**

- **Builds content and pedagogical content knowledge**
- **Clear goals, ongoing design, active learning...**

# Research in Three Key Areas

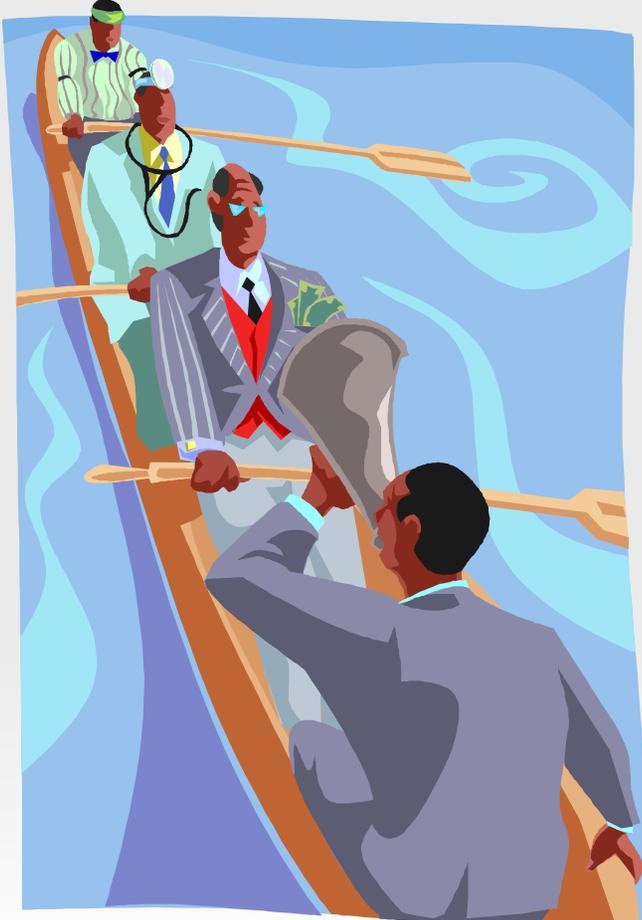


- Essential **Content** for Professional Development
- **Features** of Effective Professional Development
- ✓ **Leadership** for Professional Development



**“And so you just threw everything together?...  
Mathews, a posse is something you have to organize.”**

***“Leaders do not control, they enable others to act.”***  
**(Kouzes & Posner, p. xvii.)**



- **Leaders guide the design of quality teacher learning programs**

# Leadership is Key

- Leaders ask, “What support is needed and how can we provide it?” They follow up and make it happen.
- They clarify expectations.
- They develop a culture of inquiry, including a continuous cycle of **reflecting, questioning, gathering evidence, and planning for improvement.**
- They expand the capacity for leadership by building a **shared purpose, working collaboratively** and keeping the focus on **student achievement and adult learning.**

Linda Lambert “How to build leadership capacity.”

*Educational Leadership* (April 1998).

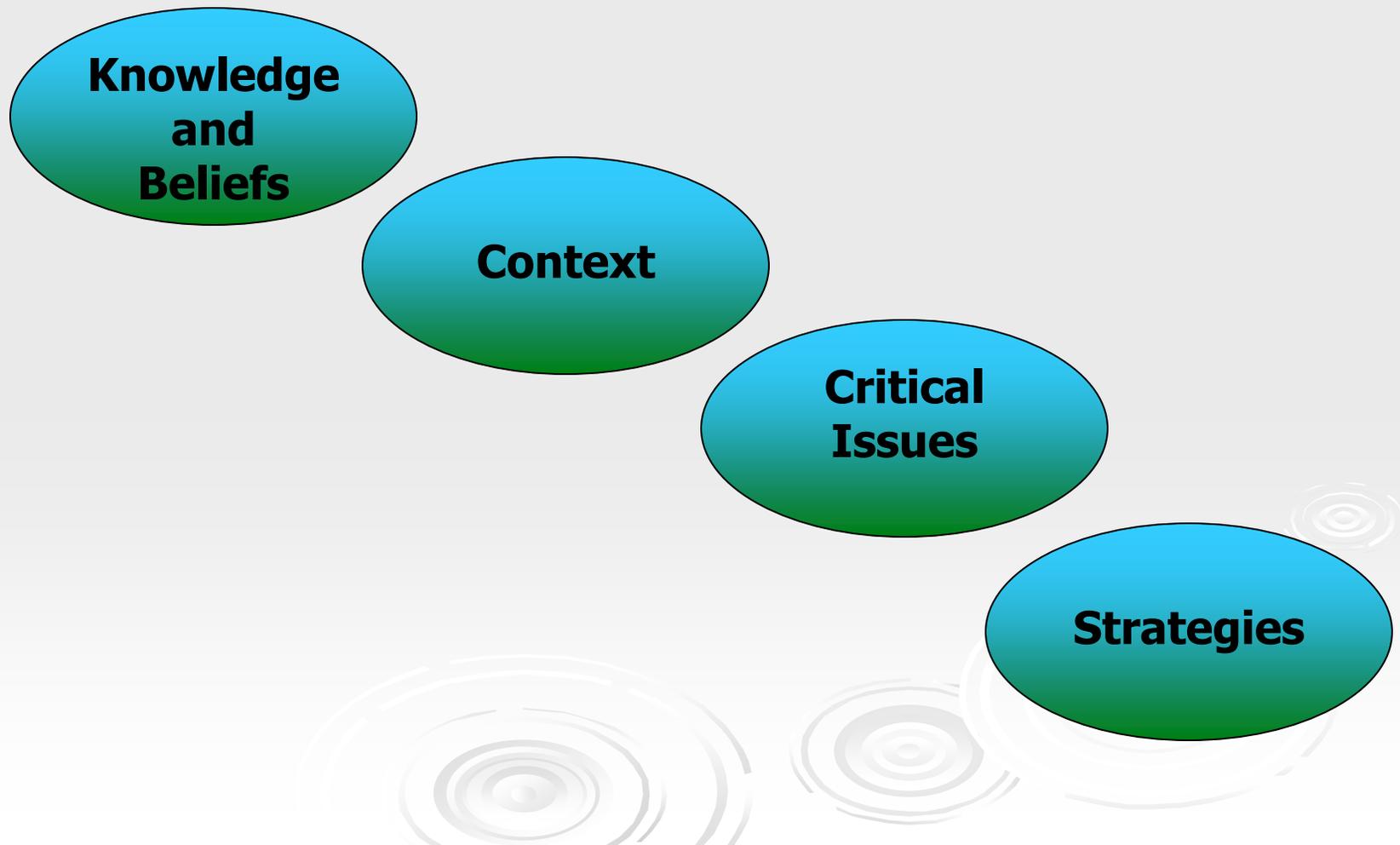
# Teacher Leaders

- Identify goals for student and teacher learning;
- Coach other teachers and demonstrate lessons;
- Lead professional development sessions; and
- Support the implementation of new curriculum by ensuring that materials are in place, problems are solved, help is available and expectations are clear

➤ Loucks-Horsley et al, 2003



# Four Inputs for Designing Professional Development



# Inputs to Professional Development Design

## ➤ ***Knowledge and Beliefs***

- Research-based knowledge and guiding beliefs that influence the design of professional development

## ➤ ***Context***

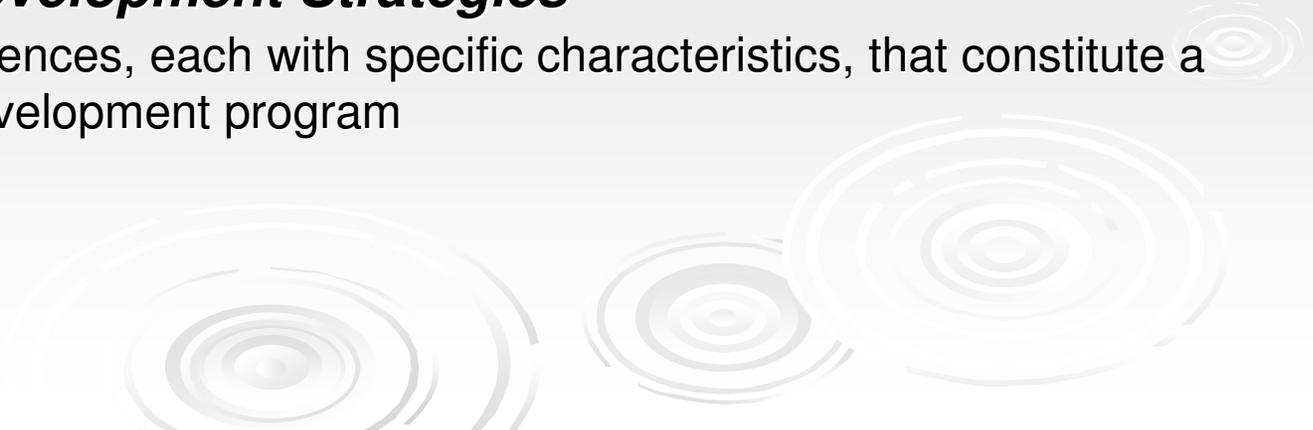
- Specific factors, information, and influences that characterize the site where the professional development will be implemented

## ➤ ***Critical Issues***

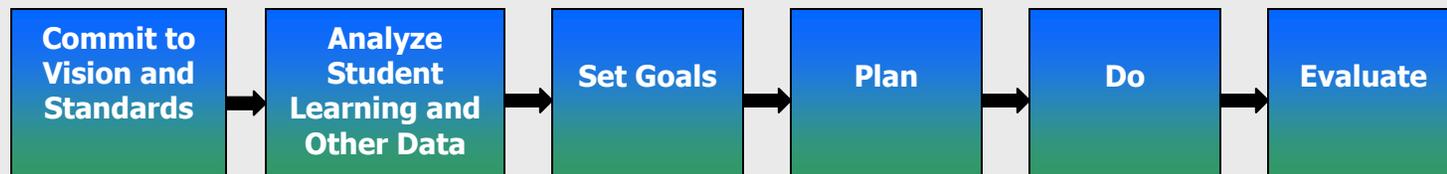
- Issues that are essential to the effective and successful implementation and sustainability of every professional development program

## ➤ ***Professional Development Strategies***

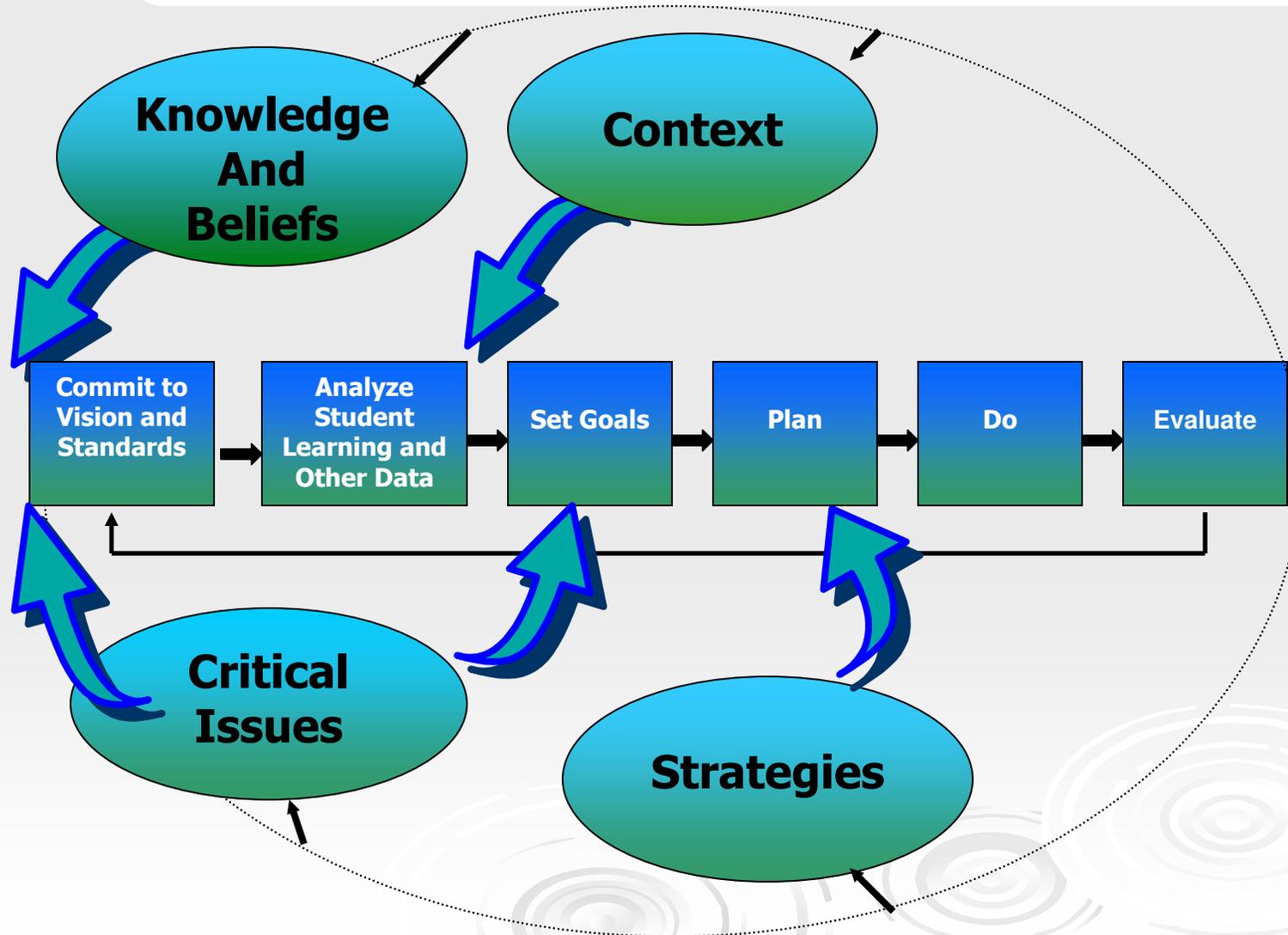
- Learning experiences, each with specific characteristics, that constitute a professional development program



# Basic Components of Professional Development Design



# Professional Development Design Framework



# Strategies

- **Aligning and Implementing Curriculum**
    - Alignment and Selection
    - Implementation
    - Replacement Units
  - **Collaborative Structures**
    - Partnerships with Scientists in Business, Industry & University
    - Professional Networks
    - Study Groups
  - **Examining Teaching and Learning**
    - Action Research
    - Case Discussions
    - Examining Student Work & Scoring Assessments
    - Lesson Study
  - **Immersion Experiences**
    - Immersion into Inquiry
    - World of Scientists
  - **Practicing Teaching**
    - Coaching
    - Demonstration Lessons
    - Mentoring
  - **Vehicles and Mechanisms**
    - Developing Professional Developers
    - Technology for Professional Development
    - Workshops, Institutes, Courses, Seminars
- 

# Reflection



THINK: What one or two ideas about effective professional development are you thinking about?

SHARE: As a team, what do you think will be important to address in your district/school PD Plan to make it successful?