Learning Math and Science in learning communities
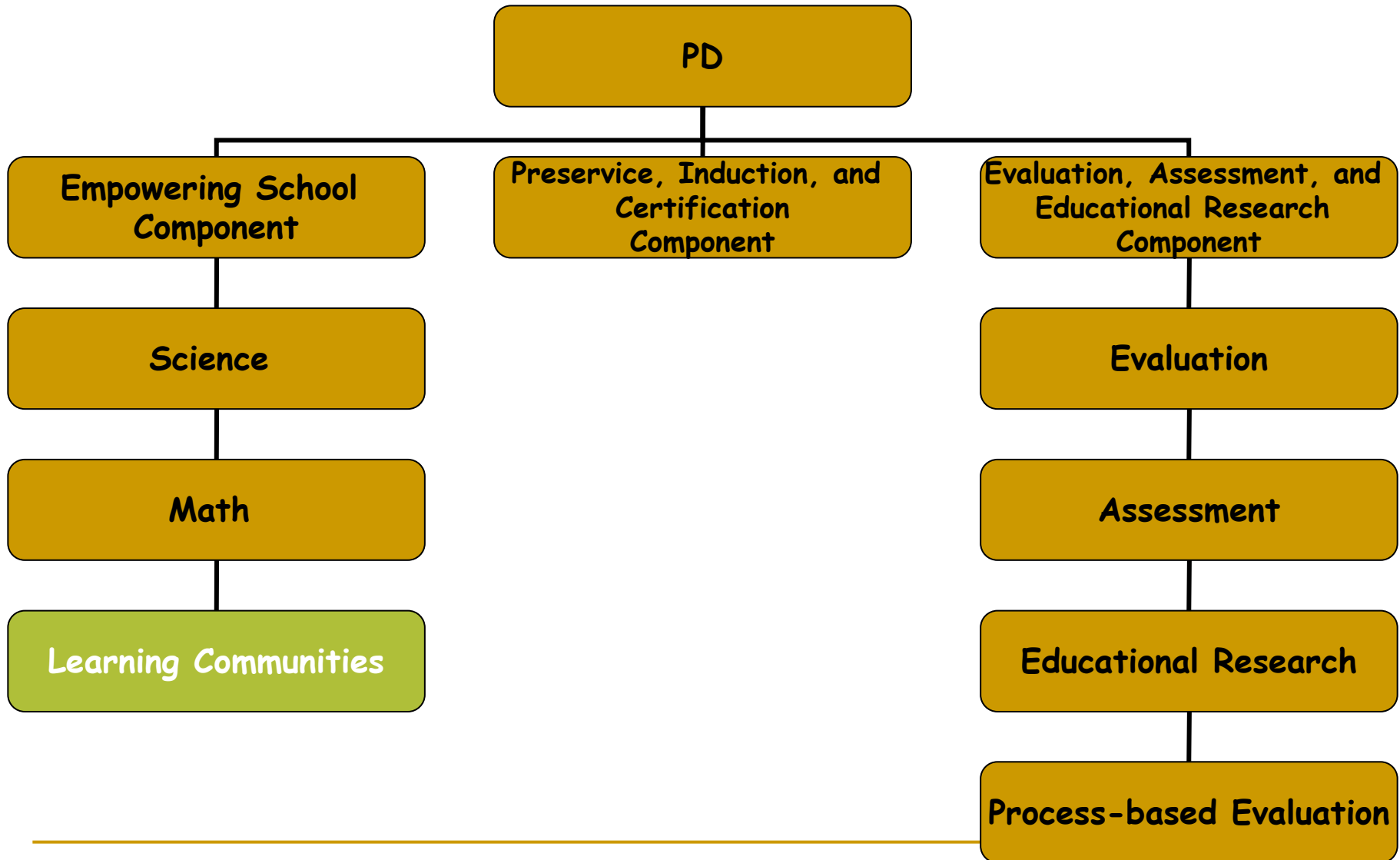
Sara Santiago-Estrada, Coordinator

Organizational Structure

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                              │      PD      │
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┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────────┐
│  Empowering School  │   │ Preservice, Induction, and │   │ Evaluation, Assessment, and │
│     Component       │   │   Certification       │   │   Educational Research      │
│                     │   │     Component         │   │       Component             │
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│       Science       │                               │       Evaluation         │
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│        Math         │                               │       Assessment         │
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│ Learning Communities │                               │  Educational Research    │
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                                                       │ Process-based Evaluation │
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Mission of the Learning Communities Component

Support the transformation of schools into learning communities by engaging all sectors of the school in an ongoing community building process including collective assessment, definition of vision and goals, continuous reflection and celebration of their process of change, aimed to strengthen the curricular alternatives and environments to improve students learning.

Our commitment

Goal 4

Create sustainable K-20 partnerships that leverage maximum support for K-12 M&S education

PRMSP's scenarios for change

- The **Alliance Guiding Team** composed by the Leadership Team and all the Team Leaders of PRMSP with representation of the Department of Education and the UPR .

- The **PRMSP's Zonal Teams,** composed by de CoPIs and all of the Zone human resources, is empowered with concepts, skills, and attitudes to consolidate the partnership of the Zone and it is aimed to create the support system to sustain the achievements of each school of the project.

PRMSP's scenarios for change

- **The District Team:** Superintendents, Math Supervisors, Technology Specialists, Special Education Support Personnel, and other resources.

  The goal is to develop a comprehensive Professional Development Plan for the District, including the PRMSP Professional Development Program.

- **The *School Team*** as a Learning Community is promoted by school leaders- faculty and administrators- to create continuous search for answer the questions related to students learning.

The principal PRMSP's scenario for change

- The **_Classroom Team_** as a learning community is advanced by empowered S&M teachers with content knowledge, teaching practices, reflection and commitment to change, aimed to create learning environments with the students.

"PhD begins in Kindergarten"

Why work with school culture in a Science and Math Project?

What experience tells us:

- Curricular reform, to be significant, needs deep changes in the school culture

- The school director is a key agent in the change process

- S&M teachers need the support of their colleagues of other disciplines, administration, and parents to fully implement the curricular changes in the classroom

Why work with school culture in a Science and Math Project?

What the literature and research tell us

Five conditions that foster transfer of change to the classroom:

1. PD directly and evidently linked to students learning
2. Teacher's sense of efficacy
3. Quality of the experience (design and implementation of PD)
4. Support and follow up
5. *School culture of support*

Valerie H. Moye,1997

Why work with school culture in a Science and Math Project?

What the literature and research tell us

"Rather than a linear, deficit approach, staff development is expanding to include networks, coalitions, and partnerships that provide a new model of teacher involvement and learning, one that not only encourage teacher knowledge, but also is far more sensitive to the contexts that help shape teacher practice."

Professional Networks,

Ann Lieberman and Lynne Miller, 2002

Target populations of the Learning Community Component for year 2004-2005

1. **161 School Base Teams**: School Director, Science Lead Teacher, Math Lead Teacher and Guidance Counselor or Social Worker

Target population of the Learning Community Component for year 2004-2005

2. **Four Zone Support Networks:** PRMSP Zone Team, District Superintendents and Math Supervisors

3. 100 **Professional development resources:** M&S university faculty and M&S exemplary teachers

4. **30 PRMSP Regional Resource Centers:** three in each of the ten Education Regions

Major accomplishments

1. Selection of schools

- Design and implementation of a **rigorous system for identification and** *selection of schools*. All partners were represented in the process: PR Department of Education, PRMSP Lead Team and Zonal Teams.

- The **first cohort of 161 schools** was selected among 267 schools recommended by other projects and the PRDE

Distribution of Schools

Zone	Elementary	Intermediate	High School	Total
Cayey	22	10	03	35
Humacao	19	10	07	36
Mayagüez	25	11	09	45
Río Piedras	19	15	11	45
Total	85	46	30	161
	53%	28%	19%	100%

Major accomplishments

- **Each school signed a commitment** to fully implement the project after a complete orientation of the project in each Zone.

First Orientation: Mayaguez Zone

At the beginning of the orientation

At the end of the orientation

Major accomplishments

2. Alignment of significant school base stakeholders

School Directors, Lead Teachers and Superintendents have participated in separate peer encounters to clarify their concerns and expectations and to identify their contribution to the success of the Alliance.

Accomplishments with School Base Team

PRMSP First Annual Conference focused on schools as learning organizations. Dr. Tim Lucas, co-author with Peter Senge of the book _Schools That Learn_ was the keynote speaker. The teams of 161 schools attended the conference. Each school received the book to be used as an instrument to develop study groups.

PRMSP First Annual Conference

Good!!!We are not alone

Wow!!!This is complex

Let's dance the change!!!
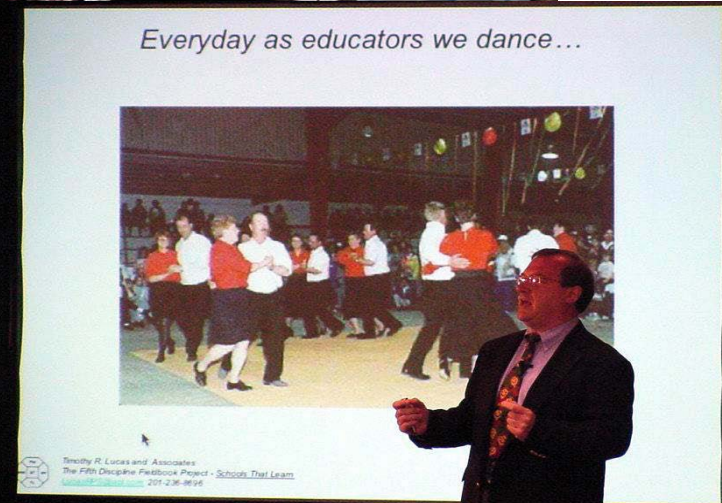
Accomplishments with School Base Team

Formation of School Base Teams

The process to establish the **_School Culture Baseline_** was designed and implemented as an instrument for schools to calibrate cultural changes. Approximately, 4,800 participants completed the instruments.

Accomplishments with School Base Teams

Each School Team is committed to the success of PR MSP in its school.

➢**89% of teachers attended the Summer PD Program.**

➢**96% of schools participated in the activities for the School Base Teams.**

➢**95% of schools completed the administration of the School Culture Baseline instruments.**

➢**96% participated in the inventory of schools' concerns.**

➢**99% of the schools expressed enthusiasm and commitment to participate in the establishment of the Science Baseline (Exam to be offered by the College Board).**

Schools Base Teams Encounter
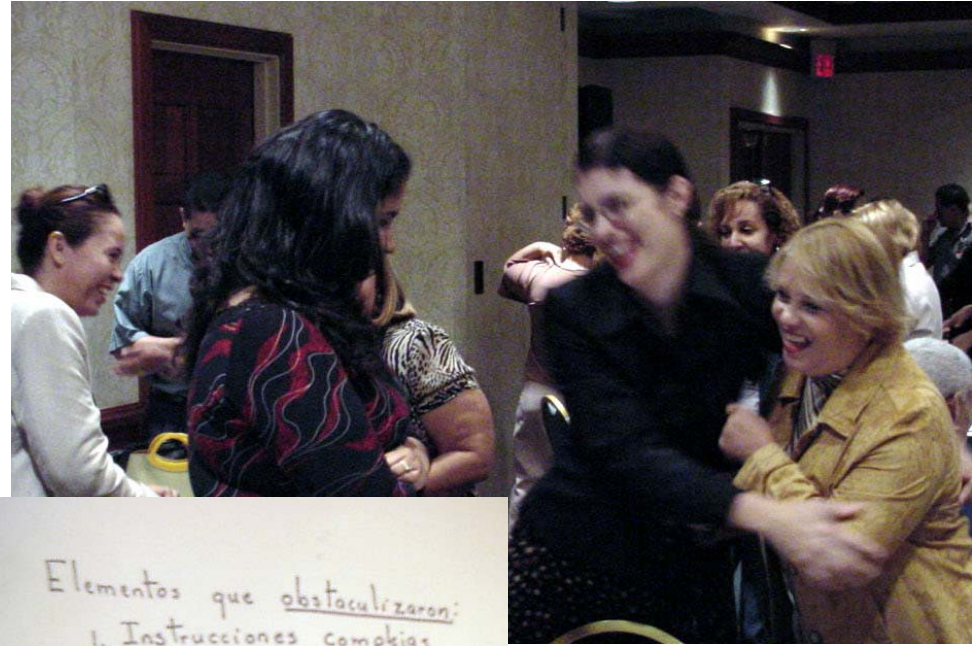
Consulting
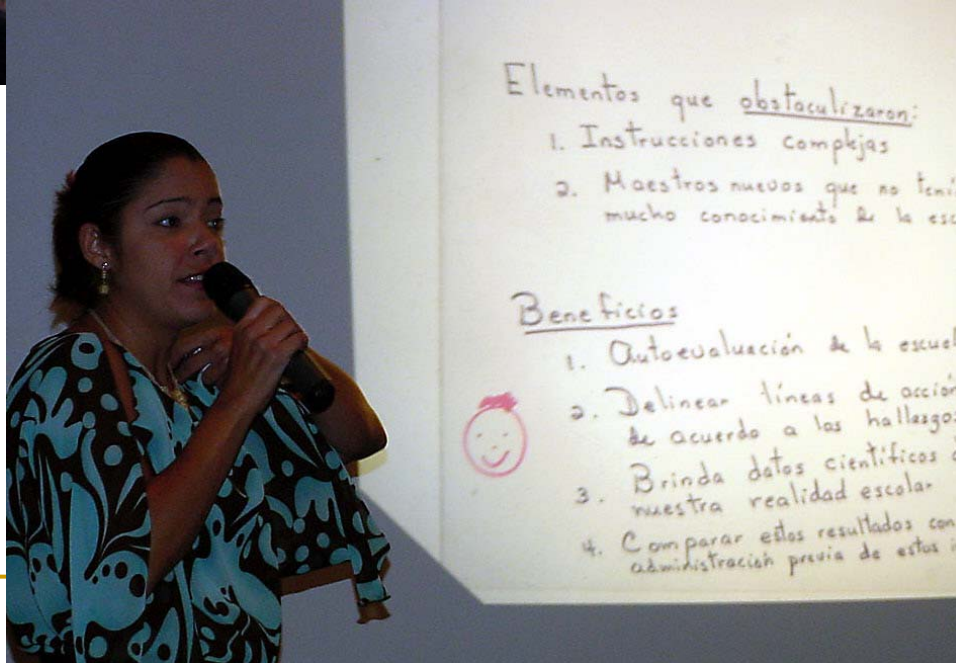
Playing

Presenting

Schools Base Teams Encounter

Team work

Getting oriented

Reflecting

Major accomplishments

4. The partnership of the Department of Education and the University is *"walking the talk"* in building a learning community.

The Alliance with the Department of Education

Support to the Department of Education on other initiatives:

(1) Implementation of Project STEP;

(2) Design and lead the Summer Academy: Integration of Technology for Students' Deep Learning;

(3) Coordination and alignment with the PRDE Institute for Leadership Development.

(4) Prof Sara Santiago- Estrada is co-author with Dr. Héctor J. Alvarez and other PRMSP resources of the book *Scientific Research in High School: Challenges and Possibilities* (pre printing stage)

Contribution to the "in house" professional development of Project staff:

- Modeling a learning community among Project Managers, Learning Community Liasons, CoPI's and other members of the PRMSP teams.

- Leading a Project Team participating in the WestEd _National Academy for Leadership in Science and Math Education_

Contribution to the "in house" professional development of Project staff:

Project Management Workshop

Inserting the cultural theme in staff meetings

Contribution to the "in house" professional development of Project staff:

- Establish a _virtual community_ with Project Managers, Learning Community Liaisons, Principal Investigators of the four PRMSP Zones.

- Represent the Project in events like the International Conference _Schools that Learn_

- Enthusiasm and recognition of all the members of the Alliance of the importance of the development of learning communities to attain project goals.

Major accomplishments

The LC Component has collaborated in the design and implementation of the M&S professional development program for teachers in different ways ➡️

Identification of potential resources (teachers)

Active participation in the "Train the Trainer" program

Strong support to Project Managers in organizing and coordinating the Summer Professional Development Program.

Design and facilitate reflection sessions in assemblies during of the

S&M Summer Professional Development Program.

Collaboration with other support partners of the Alliance

- Prof. Sara Santiago-Estrada is the author of the book: *100 Solidarity Practices* (in print) sponsored by Puerto Rico Community Foundation

- Participation in Round Tables with other education leaders

- On going exchange of resources and ideas

Plans for 2004-2005

➢ ***Consolidate the School Base Team in each of the 161 schools:***

  ➢ **Integration of the Guidance Counselor or Social Worker to the Team**

  ➢ **The Team will develop the theoretical base for the learning community**

  ➢ **Each school will analyze the results of the School Culture Baseline**

Plans for 2004-2005

Each school will:

- ➢ **Complete a <u>Force Field Analysis</u> of the conditions that support the transfer of learning from the S&M professional development to classroom.**

- ➢ **Start the process of formulation a <u>share vision</u> in each school**

The LC Component will:

- ➢ **Promote the support of Superintendents and Math Supervisors to the school team.**

Plans for 2004-2005

Address the needs of the School Directors in four main themes:

- ❑ Leading the formulation of a **shared vision**

- ❑ **Deliberation** as a tool for conflict resolution and decision making

- ❑ Leading the process of **school organization** as an academic endeavor

- ❑ How to prepare **successful proposals**

Plans for 2004-2005

Induction of 2nd cohort of schools to attain:

- ❑ Clear understanding of the project scope

- ❑ Commitment with the project goals

- ❑ Readiness for the Summer S&M professional development program

Plans for 2004-2005

- Continue the professional development of the S&M resources.

- Active participation in the design and selection of the 30 PRMSP Professional Resource Centers

- Initiate the professional development program on learning communities for the 30 schools becoming Professional Resource Centers

Our concerns

What should be a realistic scope of the Learning Communities Component, given that:

- Cultural change takes time.
- Appropriate time for calibration of significant progress is needed.
- Cultural change requires the participation of a critical mass in each school
- Schools need partners to "walk the change with them in situ"

Our concerns

- Cultural changes demand time to reflect, evaluate, plan and act.
- Schools do not exist in a vacuum, they are open systems affecting and being affected by external forces
- Major organizational changes in the educational system to come

We truly believe that..

"There is no power equal to a community discovering what it cares about."
Margaret J. Wheatley