

Productive Struggle and Peaceful Interaction in Math: A Lesson from Colombia's Escuela Nueva Model

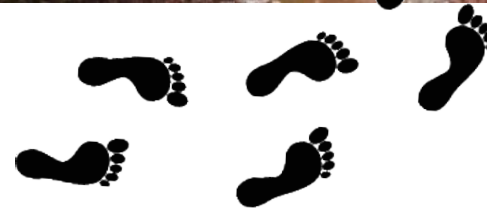
KATHRYN MILLION

DAVE MILLION

Join us on this journey to. . .

Examine and explore best practices in math task collaboration in K-8 classrooms

Use the Colombian Escuela Nueva model to explore these collaborative practices



Why did we begin this journey?

This journey was a product of our desire to help students engage in **productive struggle** with math tasks in an environment that promotes **peaceful interaction**.

This is a story of our search . . .



What is Escuela Nueva?



Research Basis:

Productive Struggle in Math

Productive struggle is defined as the intellectual effort students expend to make sense of mathematical concepts that are challenging but fall within the students' reasonable capabilities (Hiebert and Grouws, 2007).

Kapur (2010) has identified three conditions that promote a beneficial struggle as follows: (1) **choosing problems** to work on challenge without getting overly frustrated, (2) providing learners with opportunities to **explain and elaborate** on what they're doing and (3) giving learners the chance to compare and contrast **different solutions** to the problems.

Research Basis: Peaceful Interaction

In order to meet the conditions of productive struggle during math tasks, a classroom culture must be established that highlights the significant role of positive social interactions and exchanging personal viewpoints (Yackel & Cobb, 1996).

This collaborative culture can be synthesized by the Four C's in the work of the Partnership for 21st Century Skills (2011):

- Critical thinking
- Communication
- Collaboration
- Creativity and Innovation

Children Thrive in Rural Colombia

New York Times

- Learning is relevant to children's lives
- Students work in teams
- Self-paced, multi-age
- Participatory and democratic

--Sara Hamden (2013)



Make School a Democracy

New York Times



- Differentiated student groups tackle assignments as teacher “roams” the room
- Rooms buzz with student conversations
- Student government leads the school
- Students develop strong interpersonal skills

-David Kirp (2015)

The One Room School House That's a Model for Our World, National Public Radio

- Inquiry based with student led projects
- Student committees take responsibility for the school
- Focus on ***convivencia***- the art of living together

--Kamenetz, Drummond & Yenigen (2016)



History of Escuela Nueva



Fundación Escuela Nueva
Volvamos a la Gente

Started by a group of teachers in 1975 in Colombia

Modeled after the work of Dewey, Piaget, and Montessori

Focused on student-centered, democratic pedagogy

Implemented in multi-age rural schools

Strategically located in areas prone to violence and poverty

Within 10 years, the rural schools were outscoring the urban

Spread to urban areas in Colombia, then to schools internationally

UNESCO, World Bank, UNICEF help finance these international initiatives

Vicky Colbert, one of the founders, was awarded the Clinton Global Initiative Award in 2007 and the WISE Award in 2013

Dream Big

GRANT WRITING



CONNECTING WITH ESCUELA NUEVA



Lingering questions . . .

HOW DO THE COLOMBIAN TEACHERS:

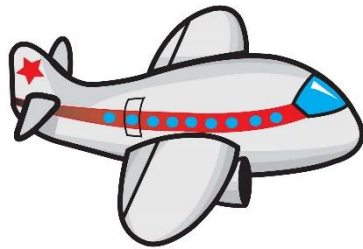
- plan and manage multi-level inquiry based learning groups;
- establish democratic norms with peaceful interactions between students;
- and, create an atmosphere where perseverance in learning is valued?



Our Trip



The Coffee Region: Area around Armenia



Colombian Andes



Why did we begin this journey?

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Are students engaged in productive struggle with rich and rigorous math tasks?



How does the Escuela Nueva model support peaceful interactions?

Promoting peaceful interactions: Student Led Government



INSTITUCION EDUCATIVA CUIDADELA EDUCATIVA SAN BERNARDO. SEDE BARRAGAN
TARJETON PRESIDENTE DEL GOBIERNO ESTUDIANTIL. AÑO 2015

 01 Nicole Lizano	 02 Isabella Mandin	 03 Victor Manuel Pelaez	 04 Jhon Escobar Marin	 05 Kevin Pogayán
 06 Karen Elvira Carranza	 07 Valentina Rincón	 08 Emmanuel Quintana	VOTO EN BLANCO	

FIRMA DEL JURADO : _____

A group of children in school uniforms are seated around a table, focused on a task. A teacher is partially visible on the right. The background features educational posters and a cartoon character on the wall.



Promoting peaceful interactions: Kindness and Warmth



Promoting peaceful interactions: Collaborative Learning Groups



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Productive struggle with math tasks: Making materials accessible



Productive struggle with math tasks: Project Based Learning



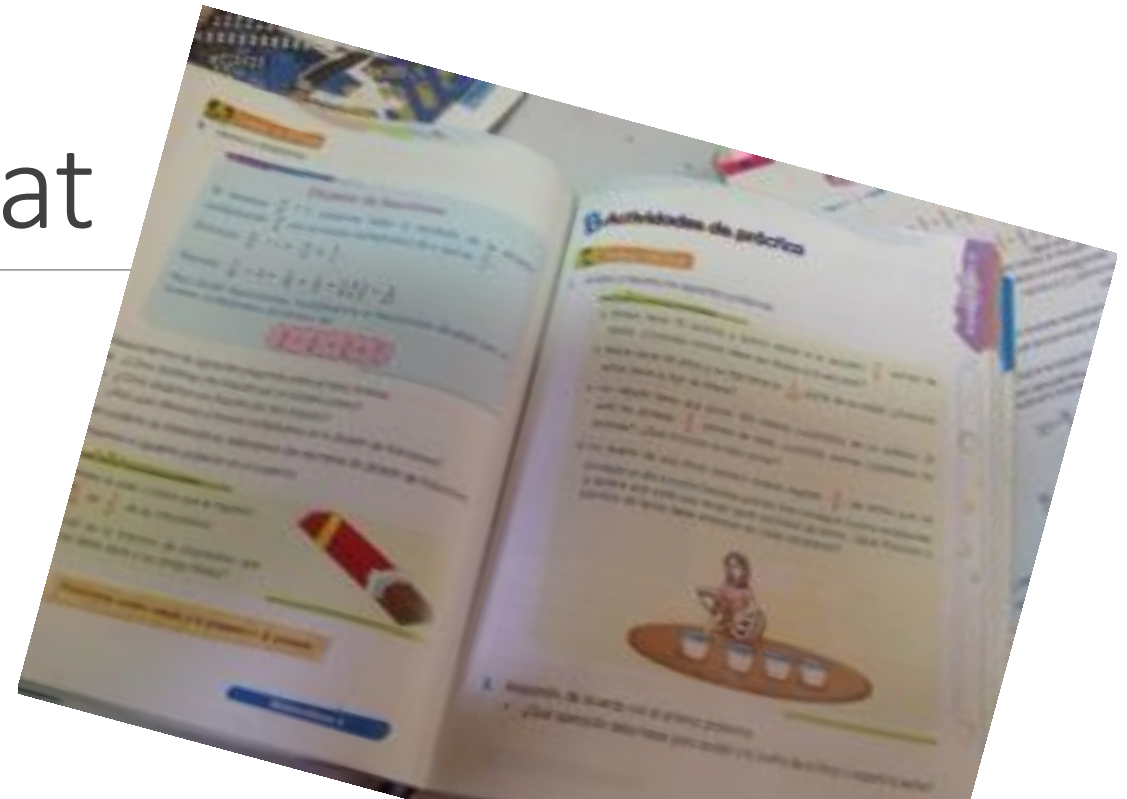
Productive struggle with math tasks: Working in Groups with the Learning Guides



Learning Guide Format

GENERAL FORMAT

- A. Building Background
 - with my class
 - with my group
- B. Practice Activities
 - with my group
 - with my partner
 - with my teacher
- C. Application
 - with my family



- 3. We use our own strategy to answer this question:
 - How many objects are there altogether?
- 4. We share our strategies and solutions with each other. We help each other to correct any errors we may have made.

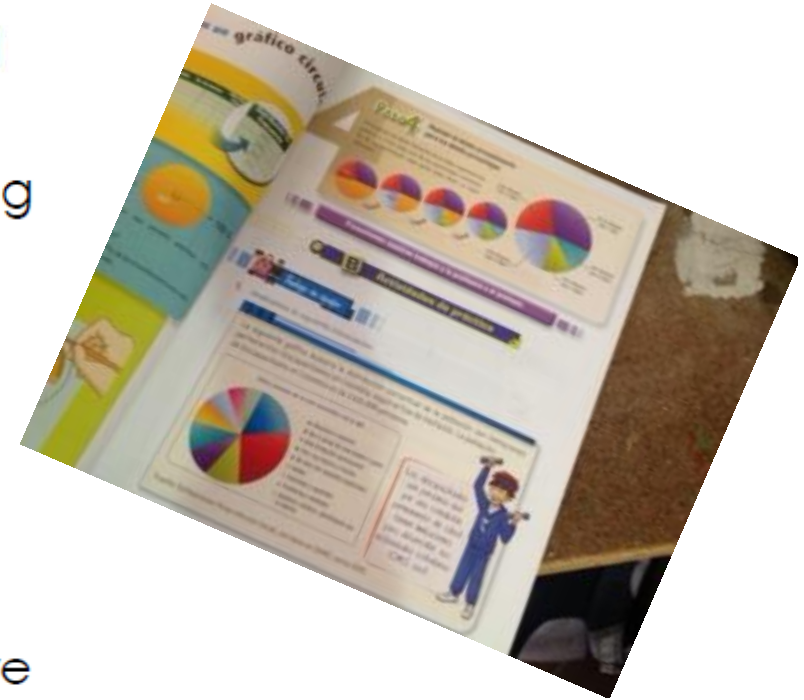
Learning Guide Format

6. From the Learning Corner, we collect one orange Cuisenaire rod and many white rods.

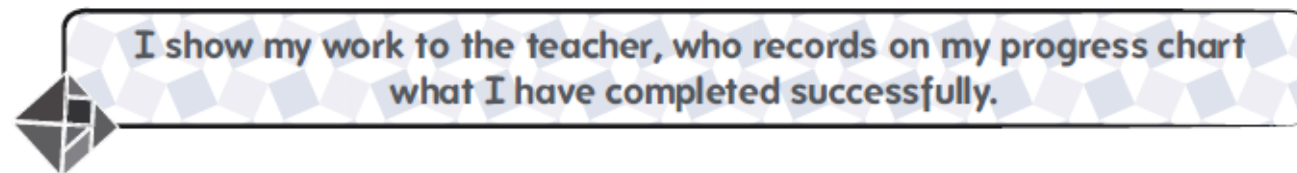
When we are finished, we return the objects to the Learning Corner.

15. Together, we create a poster showing the ideas we have learned today about how ones, tens and hundreds are related.

When we finish, we display our poster on the classroom wall. We remember that we can always look at the poster if we need help remembering these ideas.



4. We read the text together. We ask the teacher to explain what we don't understand.





1. From our surroundings, we get 28 sticks, leaves or stones. We return to our classroom and answer the following questions.

We must do each activity before answering the question in our notebooks.



Productive struggle with math tasks: Learning Guides

Questions:

Can we make groups of 2? If so, how many groups can we make?

Can we make groups of 4? If so, how many groups can we make?

Productive struggle with math tasks: Learning Guides



With My Classmates

1. One person from the group draws a line on the floor. Everybody makes a guess as to how long the line is in centimetres or metres.

We write our guesses in our notebooks. Then, one person measures the line using a metre stick. The person with the closest guess is the winner. We do this again until everybody in the group has a chance to draw a line.



It is important to listen to the views or comments of others, even if different from our own.

Productive struggle with math tasks: Learning Guides



With My Family

1.

Together with an adult in my family, we read the following text and answer the questions:

The Patel family earns 300 Kwacha every month. Each month, they pay 100 Kwacha for rent and 60 Kwacha for food.

- a. How much money can the Patels save each month?
- b. We write fractions to show:
 - How much of their monthly income do the Patels spend on rent and food?
- c. We simplify each fraction.

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How does the Escuela Nueva model support peaceful interactions?

What do you think are some of the valuable lessons to be learned from Escuela Nueva?



Here's what we are trying to incorporate . . .

Giving students authentic ownership of the classroom

Capitalizing on genuine student leadership opportunities

Valuing students' independence as learners

Supporting independence by making materials accessible and routines clear

Writing tasks that encourage/require students to collaborate.

Setting up collaborative procedures and routines for daily tasks(whole group, small group, partners) so that time can be spent on innovative projects.

Finding ways to create a sense of warmth and belonging.

Thank you for joining us on this journey!

Examine and explore best practices in math task collaboration in K-8 classrooms

Use the Colombian Escuela Nueva model to explore collaborative practices



Thank you!!!

Contact Information

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Resources

Grant

www.fundforteachers.org

Escuela Nueva Foundation

<http://www.escuelanueva.org/portal1/es/>

Agenda--A Journey to Colombia

Research basis

History of Escuela Nueva

Our journey

Escuela Nueva Model—focus on peaceful interactions

Escuela Model—focus on productive struggle

Examples of math tasks

Take aways