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BUILDING PARENTAL PARTNERSHIPS

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Happy September, *Abacus* readers! For this back-to-school issue, we wanted to focus on building partnerships with families. We invited Matthew Little to share some of the findings from his Master's thesis in mathematics education, where he explored some of the challenges and opportunities that exist in building parental partnerships.

When we talk about family involvement in education, it helps to consider the various ways parents (including guardians) connect with their child's school. McNeal (2014) describes three types of parental involvement:

1. **Parent–child** (parents talking with their child about school)
2. **Parent–school** (attending school events or parent–teacher interviews)
3. **Parent–parent** (informal networks between caregivers, like WhatsApp group chats and community networks)

Of all these different approaches, parent–child involvement—specifically regular conversations about school—has the strongest impact on things like attendance, homework completion, and students' overall outlook on learning.

However, it's really more than parents just talking to their children. We also need to think about the **relationship between families and schools.**

There are two ways to view family engagement:

1. a **school-centred view**, where families are expected to adapt to the routines, expectations, and culture of the school
2. a **family-centred view**, where schools actively adjust to understand and respond to the needs and strengths of the families they serve (Ippolito, 2010)

Neither approach works in isolation. Instead, a **"middle space"**—a more collaborative model *where schools and families co-construct learning environments through mutual respect, shared goals, and ongoing dialogue* is what Ippolito (2010) recommends.

FAMILIES AS FUNDS OF KNOWLEDGE

In the 1990's, researchers (Moll et al., 1992) recruited a group of teachers to collaborate with anthropologists to learn more about the *social capital* of the families they teach. The teachers who participated in the study said that they gained valuable insights into the lives of the children they taught. When they drew upon the family's *funds of knowledge*, their lessons were more meaningful for their students. When we view families as partners, not outsiders, we make math more inclusive and relevant for students.

With all of that in mind, in this issue, we have shared some of the research on home–school partnerships. We also assembled some resources you can use right away, such as:

- an infographic with some practical strategies you can use to help you build relationships with parents
- a photocopy-ready handout you can send home to families to promote "math talk"
- a lesson routine you can implement to build effective home–school partnerships (complete with examples)



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What do I Need?

- KaiBot, Coding Cards, KaiTiles
- Lessons
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Teacher Resource (K to 8)

Lessons & Solutions



Student Activity (K to 5)



PRACTICAL STRATEGIES TO BUILD PARTNERSHIPS WITH FAMILIES

Start with Everyday Math

Invite students to share how math shows up in their lives outside of school—cooking, building, budgeting, shopping. Use these stories as springboards for class discussion or problem solving!

Encourage Families to Talk About Mathematics with their Child

- Send home simple prompts to build parent-child talk about the math they use in their daily lives.
- Send home the parent infographic from this issue!
- Teach students a game (e.g., the game of NIM) in class, and ask them to play it at home with families.

Find Ways to Connect Strategies at Home with Strategies Taught in Class

Many parents refer to "new math" when they see unfamiliar strategies their children use in school. But these methods aren't new—they focus on building deeper understanding instead of just memorizing steps.

Here's what you can do to honour parents' ideas as well as what is being taught at school:

- When a child brings in a strategy that they learned at home, consider how that strategy connects to the strategies already being used in class.

- Use any of these **prompts:**
  - *How can we find this idea in that idea*?
  - *What do we notice when we compare methods?*
  - *What new mathematical ideas, images, or connections emerge from this discussion?*

Talk About It!

Encourage students to share the math conversations they've had with family.

These moments help deepen understanding, while reinforcing that math lives both inside and outside the classroom.

*See Husband et al.. (2025). "Find this in that": How to understand algorithms." Ontario Mathematics Gazette, 63(4), 44–46.

QUESTIONS TO SPARK MATH TALK AT HOME

You don't need to know the answer—just get curious together!

"TELL ME ABOUT YOUR THINKING."

Helps your child explain their process and organize their ideas.
Try this when: Your child has just given an answer to a question. This will help you understand the strategies they used to solve it.
Some further questions or alternative prompts you can use are:

- "What made you decide to do that?"
- "Can you walk me through your ideas?"
- "Where did you start? What did you do next?"

"WHAT DO YOU NOTICE? WHAT DO YOU WONDER?"

Invites observation and genuine curiosity before solving.
Try this when: Looking at a chart, pattern, picture, or a real-life situation.

- "What stands out to you?"
- "What's interesting or surprising?"
- "What does this remind you of?"

"HOW DO YOU KNOW THAT?"

Encourages reasoning and gives insight into your child's understanding.
Try this when: Your child seems confident in an answer or makes a claim.

- "What clues helped you?"
- "Did you notice a pattern?"
- "Could you prove it to someone else?"

"IS THERE ANOTHER WAY TO SOLVE IT?"

Promotes flexible thinking and confidence in multiple strategies.
Try this when: Your child has given one answer or strategy. This is also a good time to share your own preferred ways of solving problems, and looking for connections between your two strategies.

- "That's a great way—can you think of another one?"
- "Would someone else do it differently?"
- "How are these two ways *the same* and how are they *different*?"

"HOW CAN WE SHARE THIS FAIRLY?"

Develops an understanding of "fair share," fractions, and division.

- "How could we share this fairly among the people in our home?"
- "How much will each person get?"
- "How much might be left over? How could we represent that?"

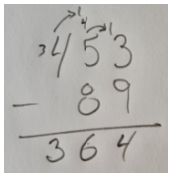
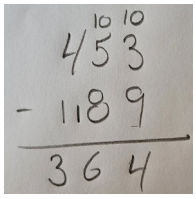
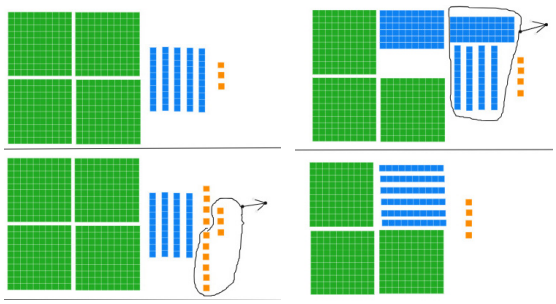
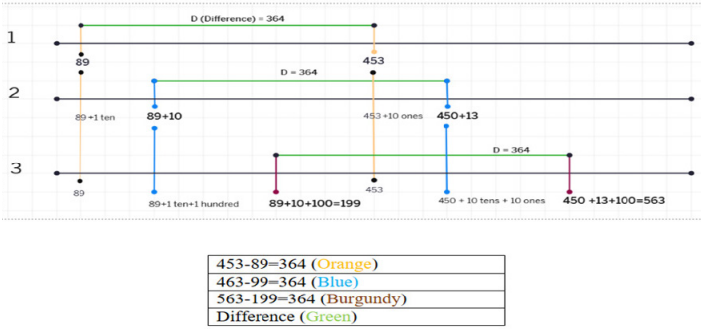
RETHINKING HOMEWORK: LESSONS FROM AN IMMIGRANT FATHER'S STORY

By Matthew Little, Elementary Mathematics Coach, Halifax Regional Centre for Education

Building meaningful home–school partnerships in math starts with understanding families' experiences. Drawing from my Master's thesis in mathematics education, I share the story of Alonso, an immigrant father navigating the challenge of supporting his son, Dario. Their story reveals both the potential and complexity of homework as a space for connection—especially when families and teachers bring different mathematical perspectives to the table.

HOMEWORK AS A WINDOW INTO LEARNING

For many families, homework is the main way to stay involved in their child's education. Alonso told me that homework helped him "see what Dario did at school," offering a glimpse into both the math content and how it was taught. It also sparked reflection. Supporting his son led Alonso to think more deeply about what it means to *understand* math—not just follow steps.

	Alonoso's Strategy	**Dario's Strategy**
Description of strategy	Traditional North American Subtraction Algorithm (TNASA) In this method, numbers are written one above the other, with digits lined up by place value (ones under ones, tens under tens, etc.). Starting from the right (the ones place), you subtract the bottom digit from the top. If the top digit is smaller than the bottom digit, you "borrow" from the next column to the left, making the subtraction possible. This process continues column by column until the subtraction is complete.	Equal Addition Algorithm (EAA) In this method, numbers are written one above the other, with digits lined up by place value (ones under ones, tens under tens, etc.). Starting from the right (the ones place), an amount, 10, is given to the top number (minuend), and an equal amount, 10 (in the form of a 1 in the tens place), is given to the bottom number (subtrahend). This is done to keep the difference constant between the two numbers. This process continues column by column until both numbers (minuend and subtrahend) have been given an equal amount; then subtraction is carried out, moving from right to left.
Images and words associated with each strategy	 "cannot take," "must borrow," and "now becomes"	 "an equal amount was given," 10 ones were given to the top, and one 10 was given to the bottom"
Description of how images are connected to rule	Below is an image associated with the Traditional North American Subtraction Algorithm (TNASA). Base-ten blocks can be effective in promoting sense making of the rules associated with the TNASA. You can see in the image below how the ten rods are broken up into ones when "borrowing" from the other column. This supports understanding subtraction as "taking away," and what it means to "borrow." 	Below is an image associated with the Equal Amount Algorithm (EAA). Number lines can be effective in promoting sense making of the rules associated with the EAA. You can see in the image below that the difference/distance between the minuend and subtrahend remain constant as equal amounts are given to each number. This supports understanding subtraction as the difference/distance between numbers.  453-89=364 (Orange) 463-99=364 (Blue) 563-199=364 (Burgundy) Difference (Green)

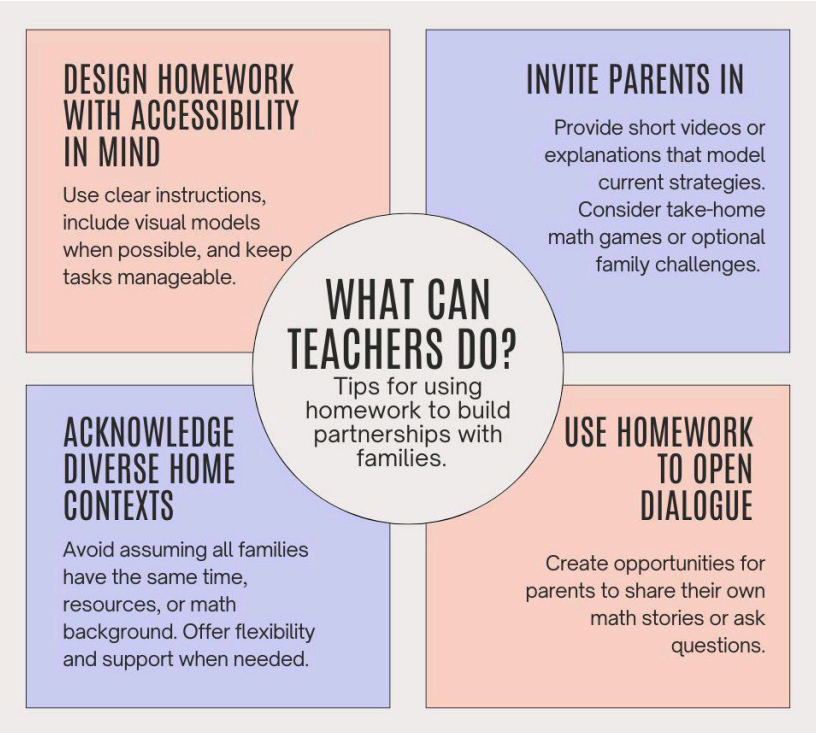
HOMEWORK A LOST OPPORTUNITY?

Research shows that unfamiliar strategies can discourage parents from engaging with their child's math (Sheldon et al., 2010); however, Alonso's experience was different. Instead of dismissing Dario's unfamiliar subtraction strategy, he got curious.

Consider Alonso's learning: Alonso's willingness to learn from his son's strategy opened the door for deeper mathematical connections by comparing his preferred solution strategy to the one they were considering in school. Alonso's understanding of subtraction was based on "taking away," while Dario used a "difference" or "balance" model. To support his son, Alonso had to shift his own mental image of subtraction. As he observed Dario's thinking, he began to appreciate it. Reflecting on his own schooling, Alonso recalled being taught to memorize steps without really understanding them: "It's not logical—you don't know why you're doing it... I learned the steps."

We (teachers) can literally offer our students the same learning opportunity as Alonso's by *flipping the table*. We can embrace parents' solution strategies in class. Collecting parents' solution strategies can allow for students to compare and analyze multiple solution strategies—a learning strategy that is well supported by the mathematics education community (NCTM, 2000).

WHAT CAN HOMEWORK LOOK LIKE?: BUILDING BRIDGES BY SUPPORTING ALL FAMILIES



Alonso's experience is powerful, but not universal. Many families face barriers—like time constraints, financial stress, or language differences—that make engaging with homework difficult. Alonso had time, resources, and familiarity with school systems. We must recognize that not all families do, and we should design homework with these realities in mind.

Specifically, when it comes to arithmetic, teachers should consider assigning homework that asks students to take home a simple arithmetic question and ask their parents how they would solve it. By inviting students to share the approaches their parents use at home, we literally *flip the table*: students return with diverse strategies and compare them within the classroom—mirroring what Alonso did. Rather than avoiding the methods parents know, we can create space for students to make sense of those approaches—and, in turn, bring that understanding back to their families. Let's rethink homework not just as practice, but as an opportunity to build bridges between home and school—bridges grounded in curiosity, collaboration, and mutual learning.

LESSON IDEA: BUILDING HOME–SCHOOL PARTNERSHIPS USING A STUDENT OF THE WEEK

What is it? Each week, a "Student-of-the-Week" shares a photo or object from home. The class uses it to notice, wonder, and ask math questions. This simple routine builds number sense, encourages problem posing, and strengthens community by connecting math to students' lives and cultures.

Family Invitation: Sample Teacher Message

Send out an invitation to the families in your class to participate! Feel free to use this sample message to send out:

"We'd love for your child to bring a photo or item that's meaningful to your family—maybe a celebration, object, or daily routine. We'll use it to explore math together and share your stories with the class."

This will help you build a positive relationship with families and position you as a partner in their child's learning.

Materials:

- Photos or meaningful artifacts sent from home
- Anchors: Noticings, Wonderings, Math Questions chart
- Family response sheet or digital communication method

LESSON STEPS

1. Introduction & Artifact Reveal

- The student shares their artifact (e.g., a photo) and highlights why it's special.

Teacher prompts:

- "What do you notice?" (builds observational skills)
- "What are you wondering?" (helps to develop skills in asking good questions)
- "What questions can be answered using math?" (builds questioning skills for mathematics)

These open prompts build observation and question-posing skills.

- As a class, teachers record:
- **Noticings:** features we see
- **Wonderings:** observations to explore
- **Math questions:** potential numeric or spatial problems

Artifact Example: A Transit Map from a Family Outing

Student of the Week Artifact: Rafi brings in a folded TTC subway map from a recent trip downtown with his family to visit the museum.



What do you notice?

- "There are numbers and coloured lines."
- "Some stations connect to more than one line."
- "You can see where the airport is!"

What do you wonder?

- "How many stops did he go?"
- "How long does it take from Kipling to Museum?"
- "What's the fastest way to get to the museum?"

Math Questions

- "How many stops are between Union Station and Museum?"
- "If it takes 3 minutes per stop, how long was the ride?"
- "How many ways could you get from the Yellow Line to the Green Line?"

2. Generate Math Questions

Guide students to transform wonderings into math-rich questions:

Teacher prompts:

- "What can we count, measure, or compare?"
- "How big/small is that?"
- "Could we group or sort these?"

Student sentence starters:

- "I wonder how many…"
- "How long is…?"
- "Could we sort by colour/size/shape?"
- "Will there be enough for everyone?"

Think-Abouts (Teacher Reflection):

- Is the question open-ended, or does it offer multiple answers?
- What math strategies does it involve? (counting, measuring, sharing, etc.)

Does it connect with family experiences and cultural context?

3. Class Reflection & Prepare for Home

Select two or three student-created math questions to send home.

Teacher note to families:

> "We loved your photo! Here are some of the math questions your child's classmates asked. Please explore any one at home—by chatting, measuring, estimating, or drawing—and send your response back by [date]."

This step is important in the reciprocal cycle moving back and forth between school and home — and gives families agency in contributing.

4. Home Response & Shared Learning

When families respond—through email, notes, or the return of the chart—read responses aloud and add to the anchor chart.

- E.g., "They counted all the toys and found there were 28 in total."
- This demonstrates real math actions at home—estimation, measurement, counting—and showcases family funds of knowledge in action.

Supports for Teachers

- Multilingual families: Use visuals + translation tools on messaging apps.
- Flexible communication: Offer multiple response options—verbal, written, digital.
- Time management: Set reasonable deadlines for return—but don't pressure families.

Teacher Reflection

- Whose cultural experiences were shared? Who hasn't had their photo yet?
- What kinds of math questions surfaced most? (count, measure, share)
- How did students and families respond? Where did deeper understanding emerge?

REFERENCES

Boaler, J. (2022). *Mathematical mindsets: Unleashing students' potential through creative mathematics, inspiring messages and innovative teaching.* John Wiley & Sons.

Carreón, G.P., Drake, C., & Barton, A.C. (2005). The importance of presence: Immigrant parents' school engagement experiences. *American Educational Research Journal, 42*(3), 465–498. doi.org/10.3102/00028312042003465

Clarke, C. (2021). Investigating homework as a family practice in Canada: The capital needed. *Education 3-13, 50*(6), 789–802. doi.org/10.1080/03004279.2021.1912135

Husband, M., Rapke, T., & De Simone, C. (2025). "Find this in that": How to understand algorithms. *Ontario Mathematics Gazette, 63*(4), 44–46.

Ippolito, J. (2010). Minority parents as researchers: Beyond a dichotomy in parent involvement in schooling. *Canadian Journal of Educational Administration and Policy, 114.*

Klein, A. (2008). From Mao to Memphis: Chinese immigrant fathers' involvement with their children's education. *School Community Journal, 18*(2), 91–118. https://files.eric.ed.gov/fulltext/EJ818861.pdf

McNeal Jr., R.B. (2014). Parent involvement, academic achievement and the role of student attitudes and behaviors as mediators. *Universal Journal of Educational Research, 2*(8), 564–576. doi.org/10.13189/ujer.2014.020805

Moll, L., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into Practice, 31*(2), 132–141. www.jstor.org/stable/1476399

National Council of Teachers of Mathematics (NCTM). (2000). *Standards for school mathematics.* Author.

O'Keeffe, L.C., Clarke, C., McDonald, S., & Comber, B. (2023). Mathematics homework and the potential compounding of educational disadvantage. *British Journal of Sociology of Education, 44*(7), 1144–1160. doi.org/10.1080/01425692.2023.2240530

Sheldon, S.B., & Epstein, J.L. (2010). Involvement counts: Family and community partnerships and mathematics achievement. *The Journal of Educational Research, 98*(4), 196–207. doi.org/10.3200/JOER.98.4.196-207

Suh, J.M., & Calabrese, S.C. (2025). Culturally responsive mathematics engagement through a family-inspired mathematizing routine. *Educational Studies in Mathematics,* 1–20.

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