CURRICULUM, PEDAGOGY AND BEYOND

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Exploring the pedagogical power of vertical whiteboards and random groups

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Today's Session

- Vertical whiteboards and random groups of 3 experience
- What are vertical whiteboards and random groups of 3?
- What are the positive impacts of using vertical whiteboards and random groups of 3 in the classroom?
- Practical ways and tips to include vertical whiteboards and random groups of 3 in your classroom.

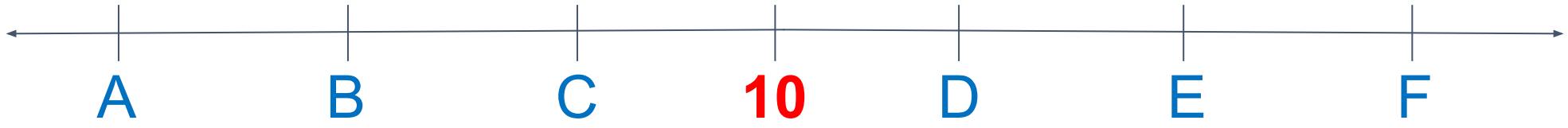
Today’s inspiration…

Experience before instruction…

- On your feet!
- Listen to the instructions
  - I will put you in groups of 3. You will have 1 whiteboard marker to share - you need to work together.
  - You will work on the task I display on the board.
- Playing cards - Jane has some, Peter has some…
- Once you have your card, move to the board with the same number, introduce yourself to your team and get started on the task.

Today's Task

What numbers could replace the letters?



How many different possibilities can you come up with?

Task credit: Peter Sullivan

Gallery Walk

Summarise

- Share 3 boards
- Ask others to explain the other group's board.
  - What do you notice about this group's work?
  - How does their board compare to yours?
  - Can you describe their approach in your own words?
  - What do you think their strategy was? How can you tell?
  - What patterns or relationships can you see in their work?
  - How is this similar to or different from your own group's thinking?
  - Did they approach the problem in a way you didn't consider?

Prompting Questions

- Are the numbers evenly spaced? How does this affect their overall pattern or progression?
- Could tools such as a hundreds chart or calculator assist in identifying additional combinations?
- Have you explored different counting patterns to uncover alternative solutions?
- What would happen if you incorporated negative numbers into your pattern?
- Have you considered extending the pattern using fractions or decimals?
- Is it possible to combine fractions, decimals, and negative numbers within the same sequence?
- Can you identify a rule or pattern that connects these numbers? How might you record this rule?
- What predictions can you make if the pattern were to continue indefinitely?

Reflect on your experience...

What did you notice about....

the way you worked?	your learning?	the risks you took?
the language you used?	how you worked with others?	your thinking?
the benefits?	how your students might work in this way?	other insights?

What are ‘Vertical Whiteboards’?

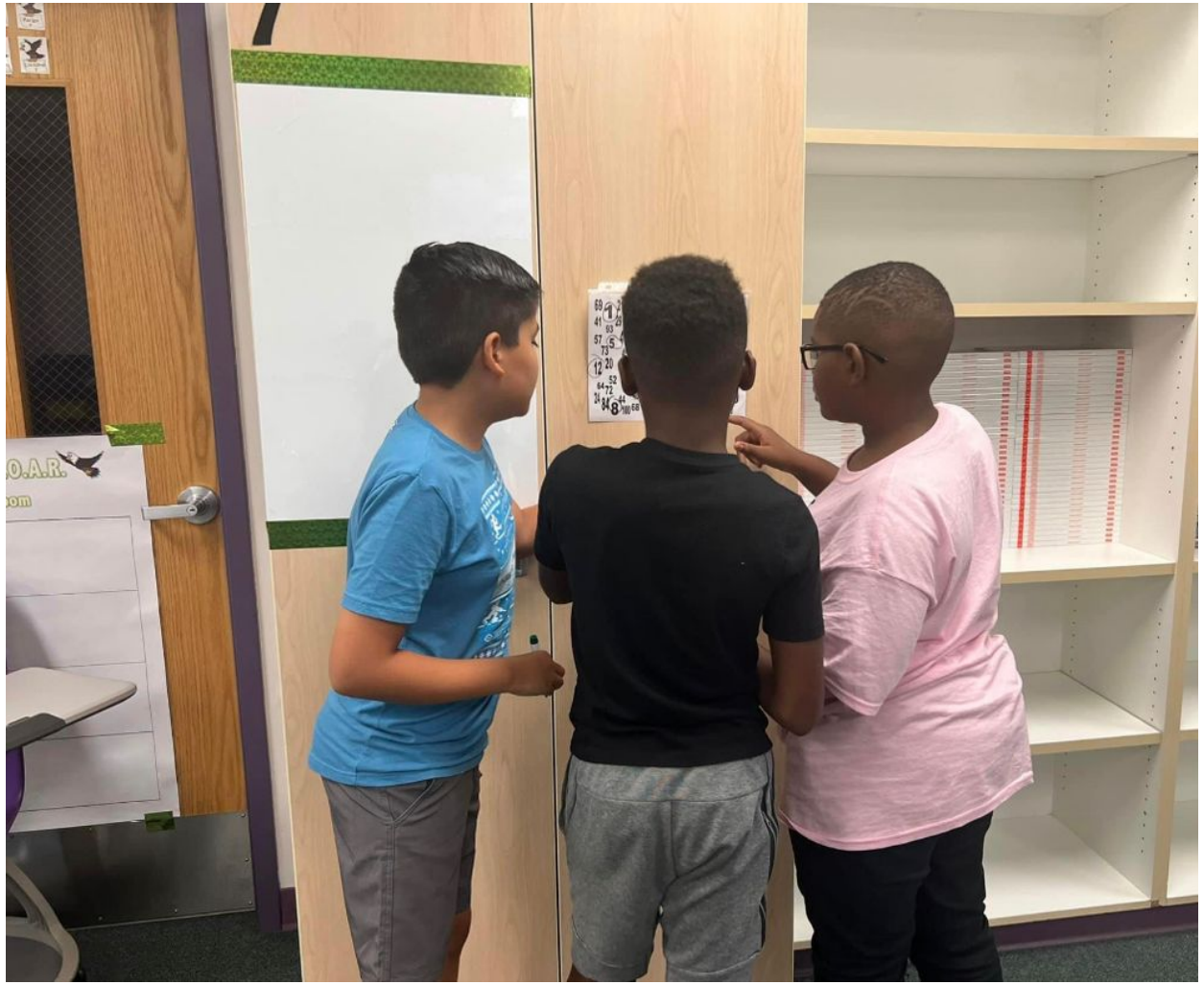
- Any non-permanent surface can be used (whiteboards, windows, cellophane, melamine boards, adhesive whiteboard rolls).

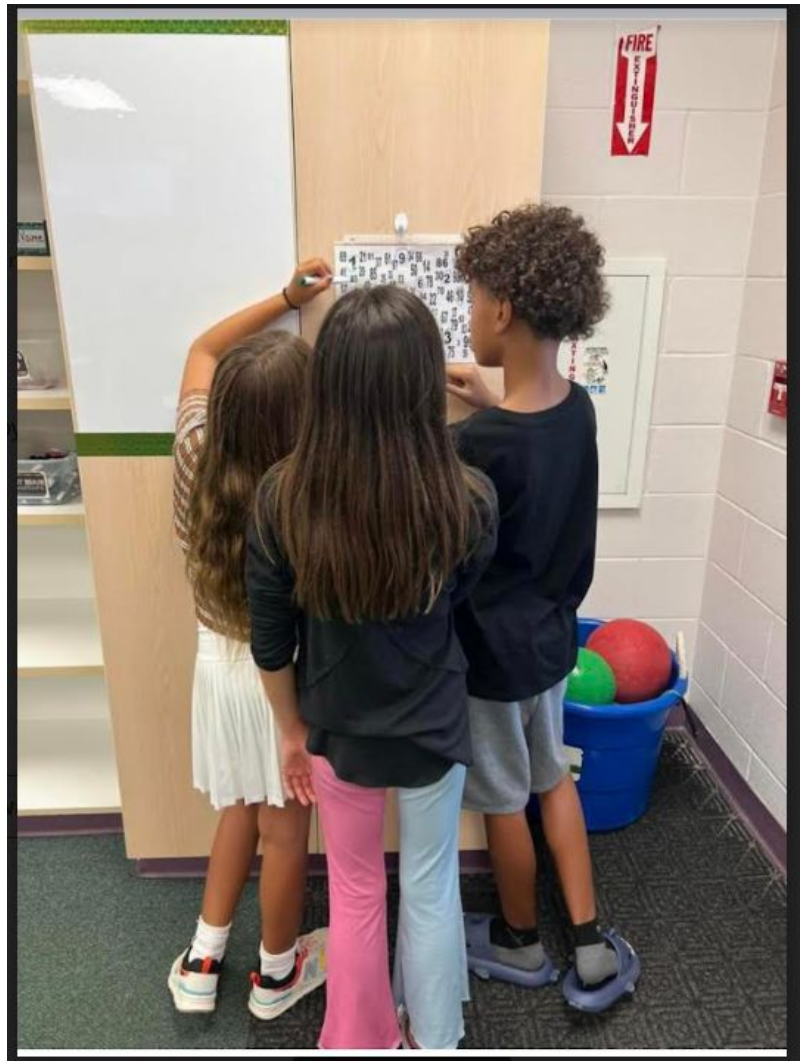
- The important thing is - the surface must be erasable.
- Large enough for 3 people to work at.
- Positioned so the group can **stand** around the board.
- Preferably positioned around the walls of the room

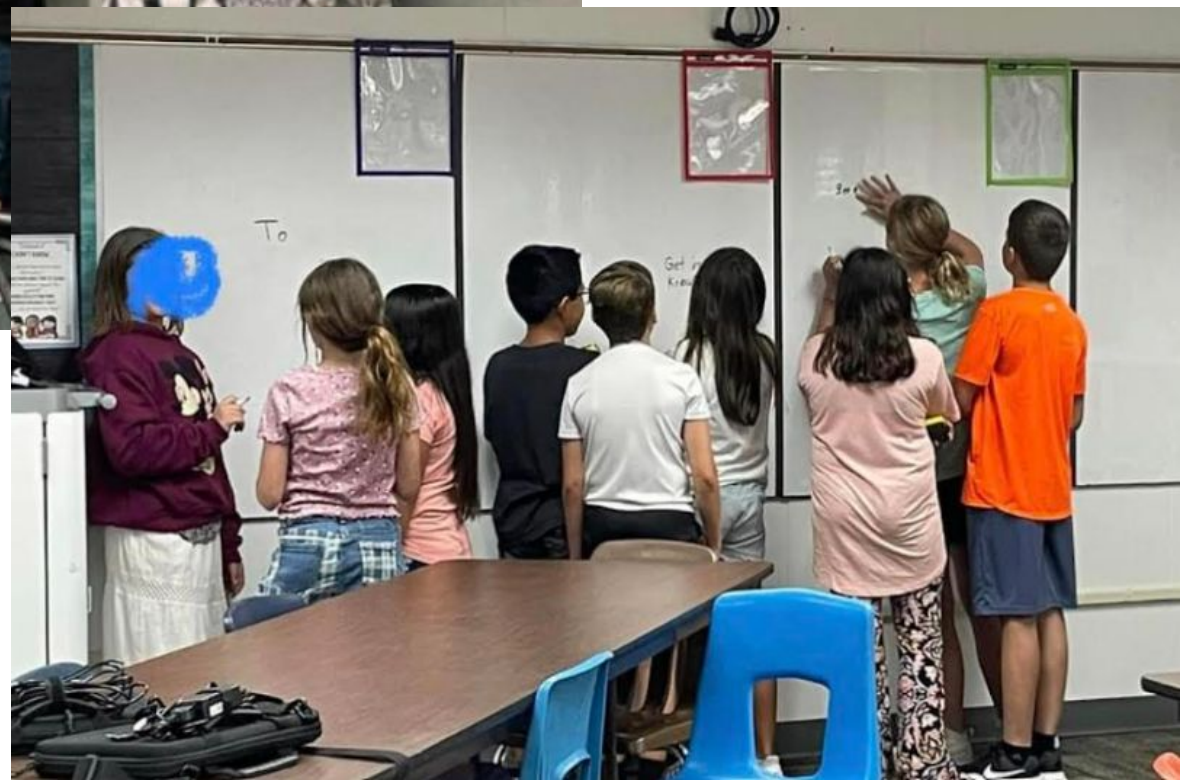
What are ‘Random Groups of Three’?

- Students work in groups of three.
- The groups are formed randomly.
- The groups are formed visibly.
- The groups are likely to be mixed ability, but as they are random, any mix is possible.
- The groups will most likely be different everyday, but again strange things sometimes happen!

What can you see in these photos?



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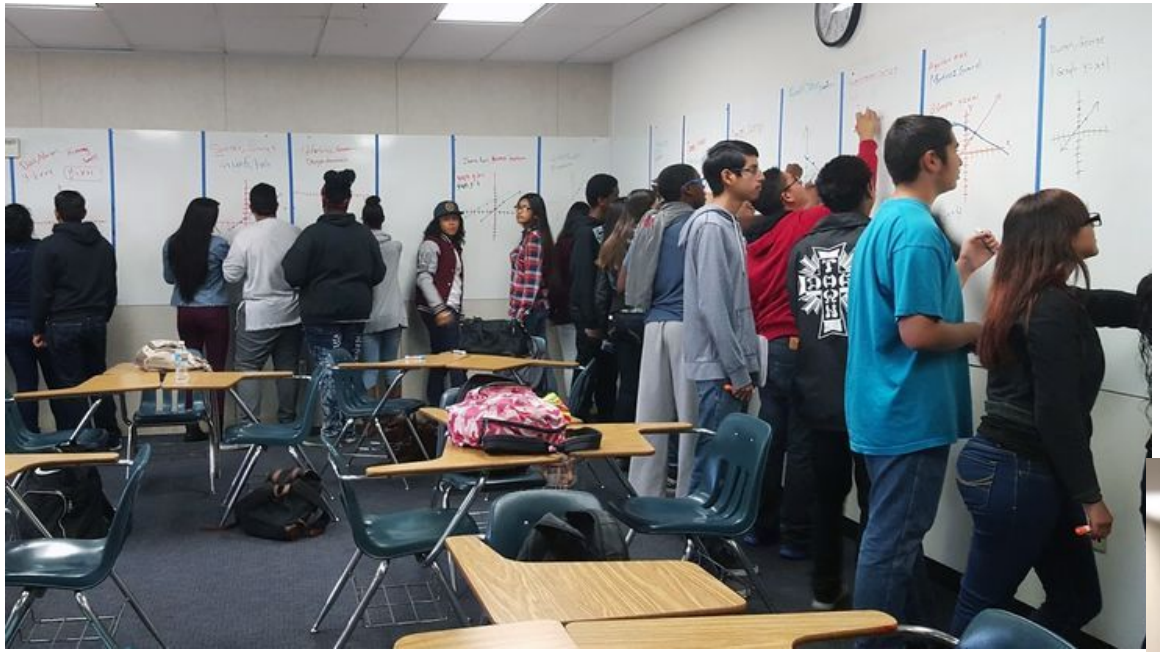
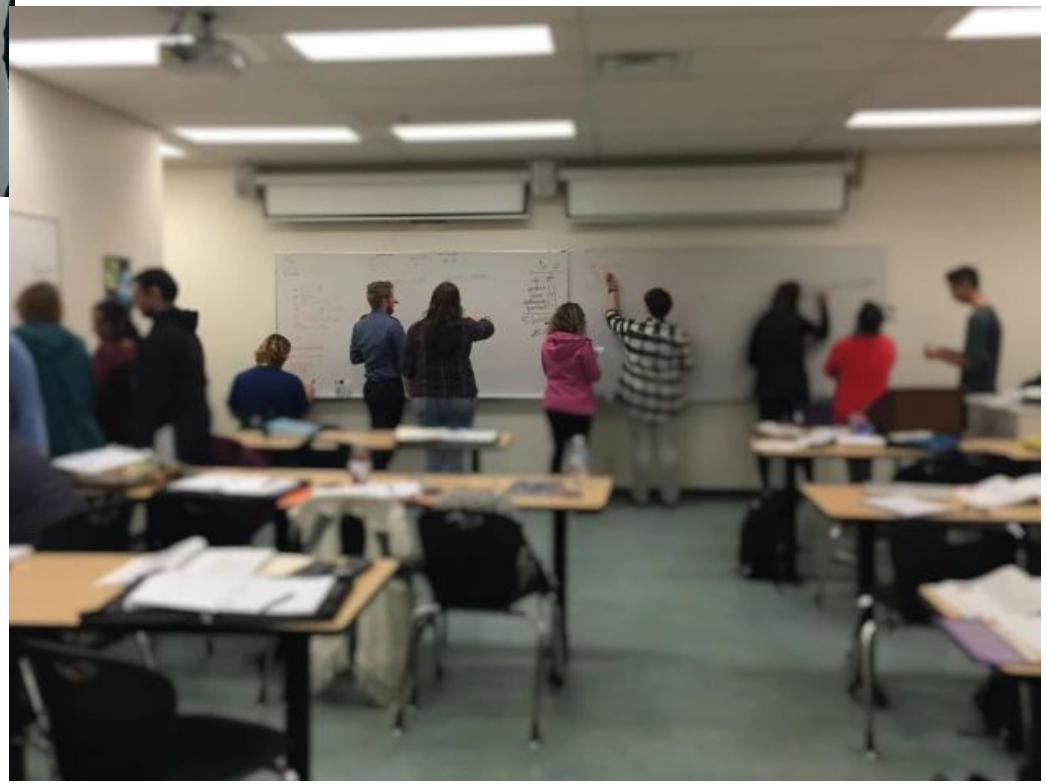




What does the literature say?

Peter Liljedahl

Vertical Whiteboards ‘almost completely eliminated the stalling and faking behaviour and had a huge impact on the amount of time students were willing to spend thinking when working on tasks’ p. 58. When working on a vertical whiteboard (as compared to horizontal whiteboard, vertical paper, horizontal paper, notebook), the time on task was in most cases double the amount of minutes. (Liljedahl, 2016)

Jo Boaler

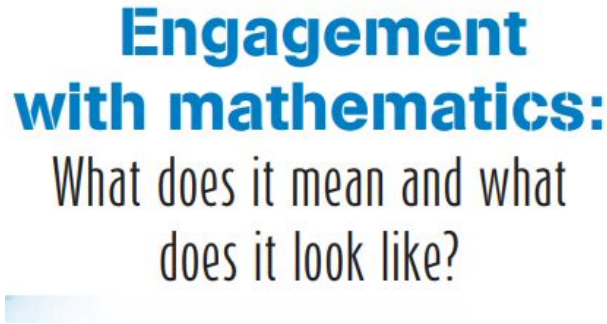
Students themselves rate the importance of social interactions as part of effective learning particularly in the middle years, which can be enabled through the use of vertical whiteboards in groups. (Boaler, 2000)

What does the literature say?

Catherine Attard

Three levels of student engagement in mathematics;
Cognitive - student values learning,
Affective - student is willing to be involved in the work,
Behavioural - student actively participates.
The use of vertical whiteboards can be linked to all 3, but particularly the behavioural aspect. (Attard, 2012)

Engagement increased when students were involved in lessons that were student-centered and interactive. (Attard, 2013)

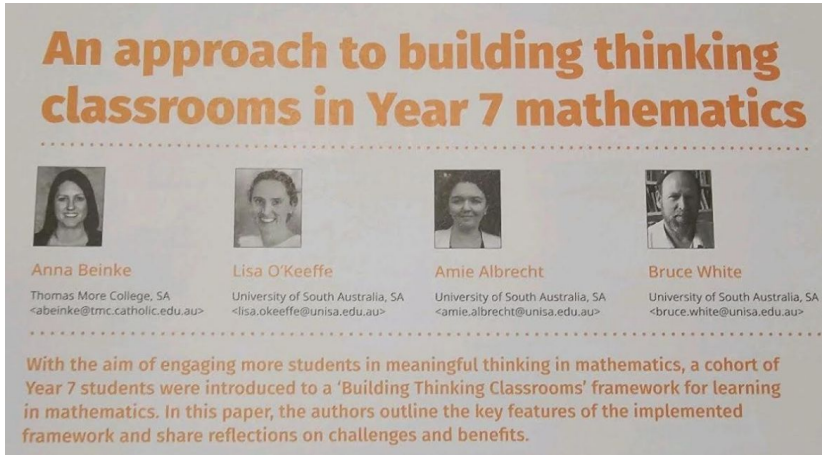


Australian Primary Mathematics Classroom, Vol. 17, No. 1, 2012: 9-13

What does the literature say?

Anna Bienke, Lisa O'Keeffe, Amie Albrecht, Bruce White

'The combination of strategies selected from the Building Thinking Classrooms approach proved useful in shifting many students from passive to active learnings, with students coming to mathematics class knowing they would be responsible for communicating their ways of thinking and working.' (Bienke et al., 2024)


An approach to building thinking classrooms in Year 7 mathematics

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With the aim of engaging more students in meaningful thinking in mathematics, a cohort of Year 7 students were introduced to a 'Building Thinking Classrooms' framework for learning in mathematics. In this paper, the authors outline the key features of the implemented framework and share reflections on challenges and benefits.

Why does engagement increase?

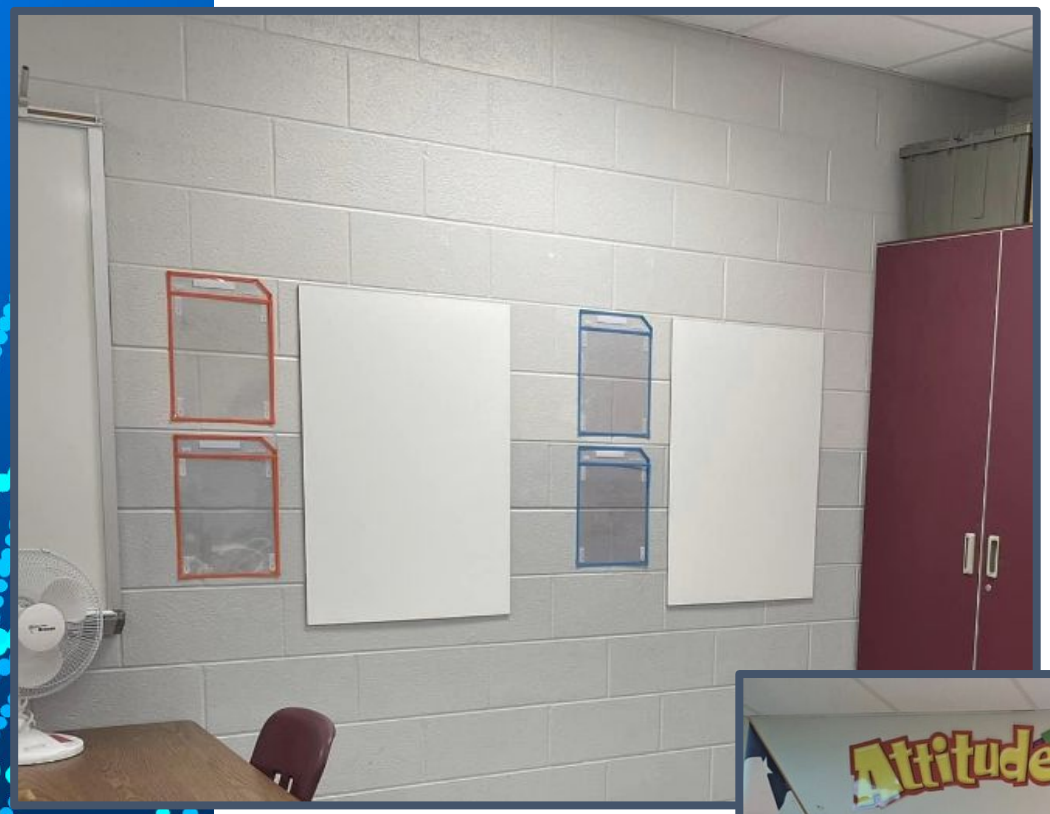
When students were working in visibly random groups at vertical whiteboards;

- Student participation increased.
- Interaction between students and teachers was more purposeful, constructive and timely.
- Interactions between students were positive.
- Enjoyment for both students and teachers was enhanced.

Each of these elements contributed positively to increased student engagement throughout these lessons.

What is the impact on learning?

- More time on task
- Less stalling
- Easier for the teacher to see and assist students at their point of need
- Enhanced accountability
- Active participation
- Promotes multiple representations
- Encourages a variety of strategies
- Promotes reasoning and justification




Attitude is a little thing That Makes a BIG


Wipebook

Practical tips for using vertical whiteboards

- 1 whiteboard marker per group (all black / blue)
- ‘Pass the marker’
- Teacher to have a different coloured marker
- Position the boards around the room so the teacher can see them all at once (also decreases student anonymity as they can all be seen too!)
- Set expectations for using whiteboards (examples on next slide)

WHITEBOARD RULES

https://iexplorescience.com/using-vertical-whiteboards-to-promote-student-thinking/

WHITEBOARD MOVES

COLLABORATE
PERSEVERE
TAKE RISKS

RANDOM GROUPS
Stand with your group at your whiteboard.

ONE MARKER
The person explaining their thinking should be different than the person writing. Take turns.

RECORD THE TASK
Listen carefully to the task. Record key information at the top of your whiteboard.

WORK WITH YOUR GROUP
Be responsible for the learning of every member. **EVERYONE** in your group must understand so that **ANYONE** can explain.

ERASE WITH CARE
Ask permission to erase someone else's ideas. Don't erase work circled by the teacher.

Remember, "wrong" thinking can lead to new ideas.

https://mattcoaty.com/2023/08/26/reflecting-on-building-thinking-classroom-routin

Practical tips for using random groups of 3

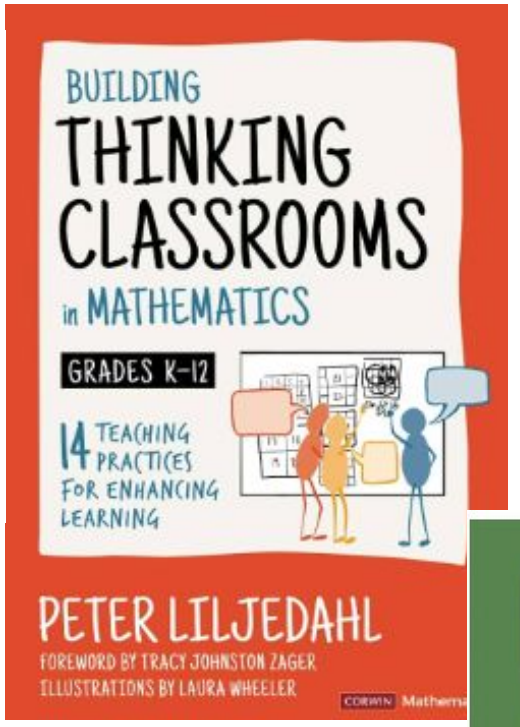
- Tell the students why.
- When forming groups, ensure they are **visibly random** (do them with the students - examples on the next page.
- Change the groups every day.

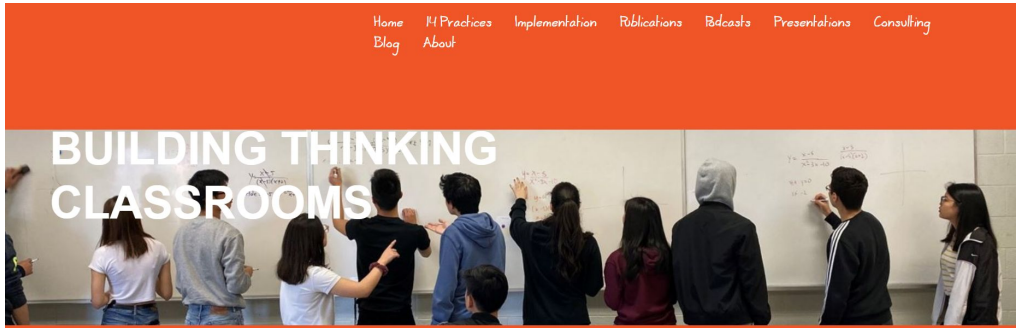
Creating random groups of 3

ClassDojo

flippity

Where to for more information?

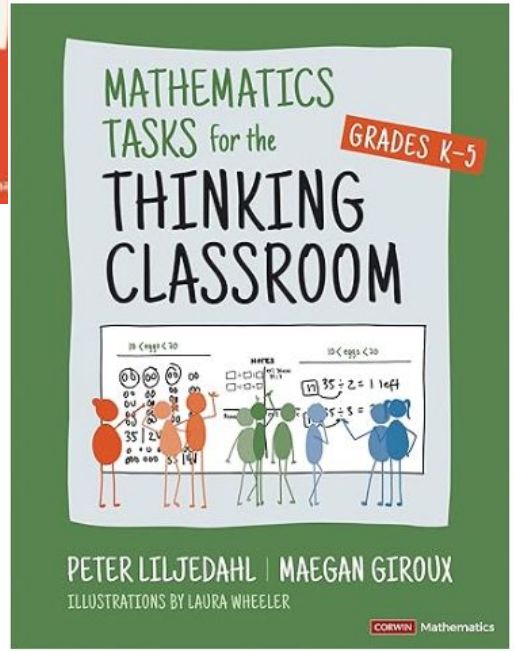


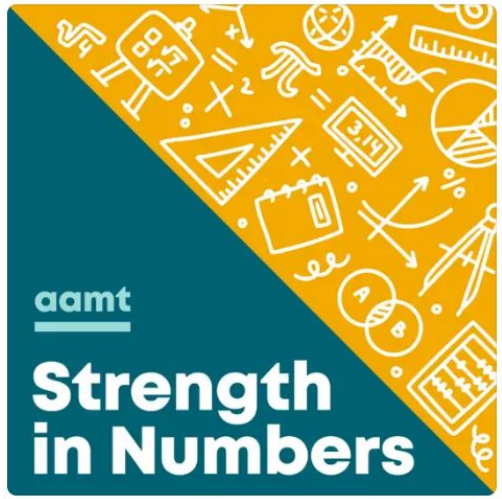


https://buildingthinkingclassrooms.com/

CULT OF PEDAGOGY

https://www.cultofpedagogy.com/thinking-classroom/





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Task 30: Show me your number (p 277)

This task has students represent whole numbers and then decimals in a variety of forms: expanded, number-word, word form, and place value charts.

What would come next…

- Consolidation tasks
- Student notes to their future forgetful selves
- Check your understanding questions (mild, medium, spicy)

The Banner

- Whatever task a group in working on, and only the task they are currently working on is written on the banner. Their work happens below the banner.
- When a group is finished with the current task, they look around at other groups' banners and see if there is a task on one of them that they have not done yet, and they steal if for themselves. This new task then gets written on their own banner.

(Liljedahl, P, p. 36)

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Event App

App Download Instructions

Step 1: Download the App 'Arinex One' from the App Store or Google Play

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Step 2: Enter Event Code: **mav**

Step 3: Enter the email you registered with

Step 4: Enter the Passcode you receive via email and click 'Verify'. Please be sure to check your Junk Mail for the email, or see the Registration Desk if you require further assistance.

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Be in it to WIN!