

BUILDING THINKING CLASSROOMS



A collage of various classroom scenes is overlaid with a large teal pie chart. The photos show students in different states: some are engaged, some are sleeping, and some are looking thoughtful. The pie chart is the central focus, with two segments labeled with statistics about student thinking time.

20% of
students
spent 20% of
class time
thinking

80% of
students
spent 0% of
class time
thinking

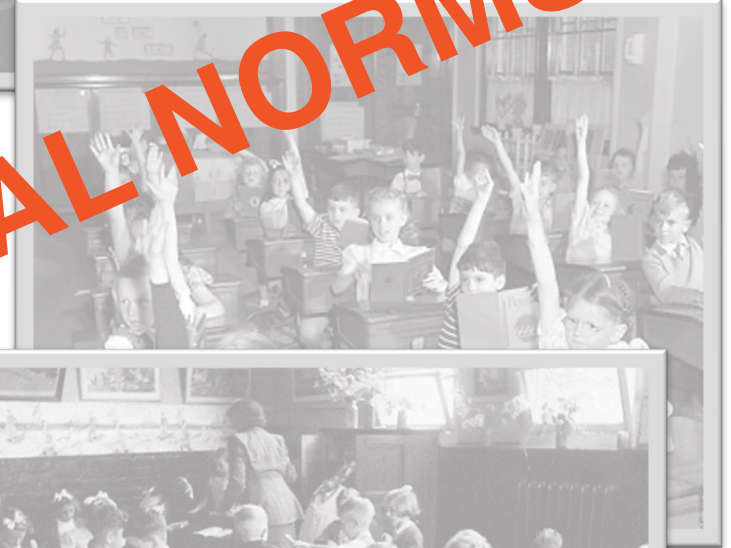












INSTITUTIONAL NORMS



NON-NEGOTIABLE NORMS



**STUDENTS
NOT THINKING**



**INSTITUTIONAL
NORMS**





400+ TEACHERS | 15 YEARS | 2 WEEK CYCLES

CLASSROOM PRACTICES

1	What are the types of tasks we use?	
2	How we form collaborative groups?	
3	Where students work?	
4	How we arrange the furniture in our classroom?	
5	How we answer questions?	
6	When, where, and how tasks are given?	
7	What homework looks like?	
8	How we foster student autonomy?	
9	How we use hints and extensions?	
10	How we consolidate a lesson?	
11	How we give notes?	
12	What we choose to evaluate?	
13	How we use formative assessment?	
14	How we grade?	

CLASSROOM PRACTICES

OPTIMAL PRACTICES FOR THINKING

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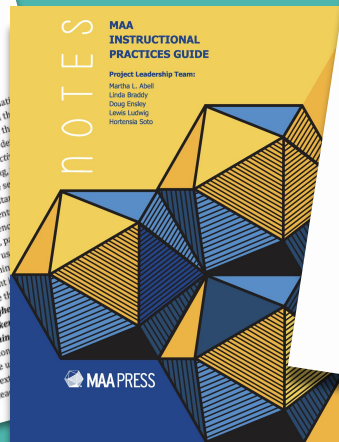
CLASSROOM PRACTICES

OPTIMAL PRACTICES FOR THINKING

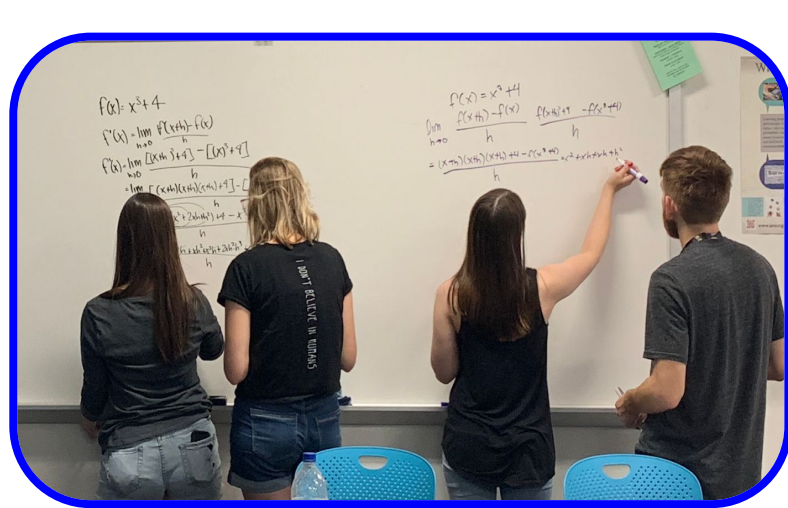
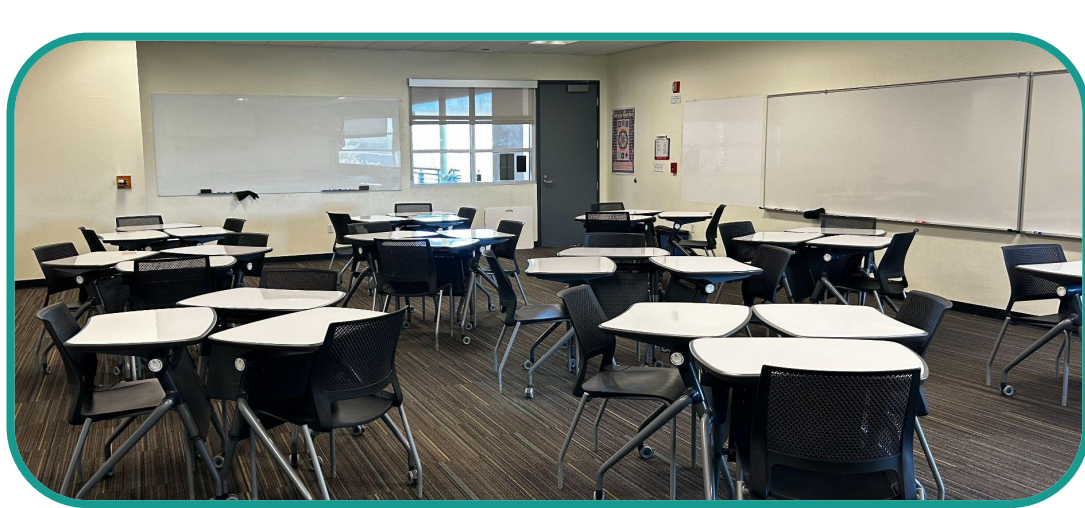
1	What are the types of tasks we use?	Use thinking tasks
2	How we form collaborative groups?	Form frequent visibly random groupings
3	Where students work?	Use vertical non-permanent surfaces
4	How we arrange the furniture in our classroom?	<i>Defront</i> the classroom
5	How we answer questions?	Only answer keep thinking questions
6	When, where, and how tasks are given?	Give tasks early, standing, and verbally
7	What homework looks like?	Give check your understanding questions
8	How we foster student autonomy?	Be intentionally less helpful
9	How we use hints and extensions?	Create and manage <i>flow</i>
10	How we consolidate a lesson?	Consolidate from the bottom
11	How we give notes?	Use meaningful notes
12	What we choose to evaluate?	Evaluate what you value
13	How we use formative assessment?	Communicate to students where they are and where they are going
14	How we grade?	Report out based on data (not points)

Building Thinking Classrooms @ Chandler-Gilbert Community College

April Ström
Mathematics Faculty







① Begin w/ a Problem

Give a problem-solving task

To start:

- Problems should be
- ☐ engaging
- ☐ not-curricular
- ☐ collaborative
- ↳ promote talking

Later:

- Problems can be curricular
- eg textbook problems

② Visibly Random Groups

- ☐ Randomly assigned
eg playing cards
- ☐ Daily & in front of students
- ☐ 2 or 3 students / group



- ☐ Sit & stand together

③ Vertical NonPermanent Surfaces

- ☐ Vertical
- ☐ Erasable



WHITEBOARD



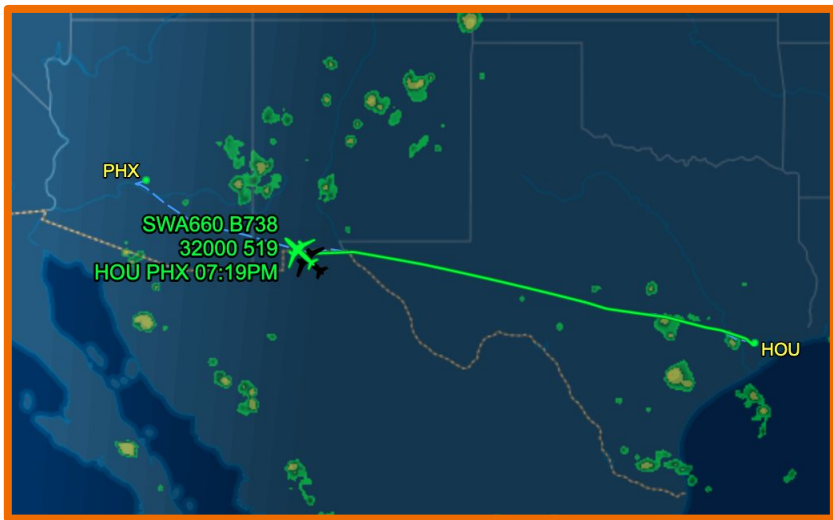
CHALKBOARD



WINDOW

- ☐ 1 marker or chalk per group
- ↳ promotes discussion

Southwest Flt 660 Houston to Phoenix 8/27/21



Source: FlightAware.com

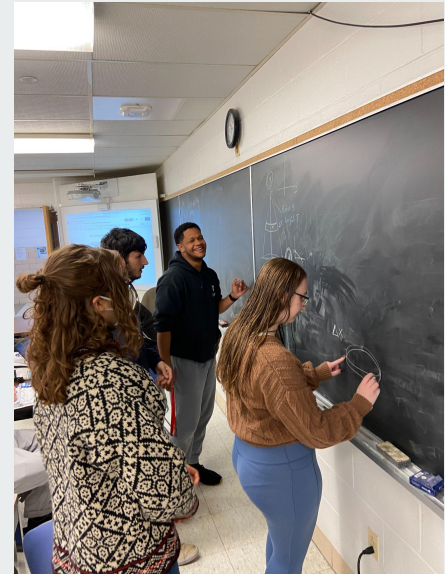


Time (EDT)	Time Since Takeoff (sec)	Altitude (feet)
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08:06:46 PM	48	2225
08:09:06 PM	188	9350
08:13:28 PM	450	20525
08:16:52 PM	654	26700
08:19:37 PM	819	30500

What do you notice?
What do you wonder?

Building Thinking Classrooms at Westfield State

Christine von Renesse, Westfield State University





About me:



- Learned how to teach using discovery in Germany.
- Full professor at Westfield State University, MA.
- Member of Discovering the Art of Mathematics project www.artofmathematics.org
- In leadership team of the COMMIT network <https://www.comathinquiry.org/> which supports faculty in teaching using ideas like BTC.

I do not lecture BUT I facilitate discussions.

Gallery Walks (Consolidation)

- Visit groups in process
- Choose which groups to visit and in which order
- Ask students to repeat what they heard
- Ask students in the audience to guess what a group did
- Connect work across groups
- Establish vocab, procedures and results





Building Thinking Classrooms - Textbook

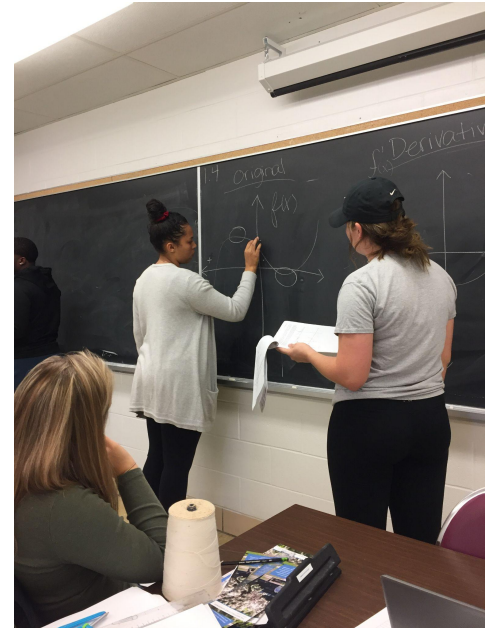
- Methods Course for Future Secondary Teachers
- Graduate Class for Innovative Teaching in Mathematics
- Students interact while reading on Perusall
- Students experience BTC in class
- Teacher experiment with ideas and report back.

Perusall®

Also: The book is a fun read and gives credibility to evidence based practices.

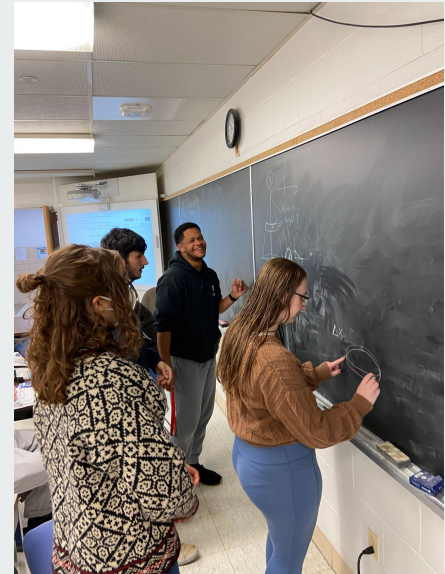
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- I sometimes choose groups after week 2
- Google docs are used for notes (including images of board work and annotations)
- I use specifications grading & ungrading



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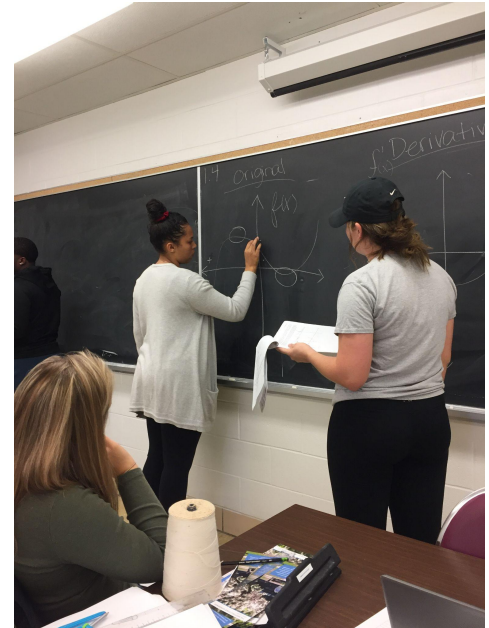
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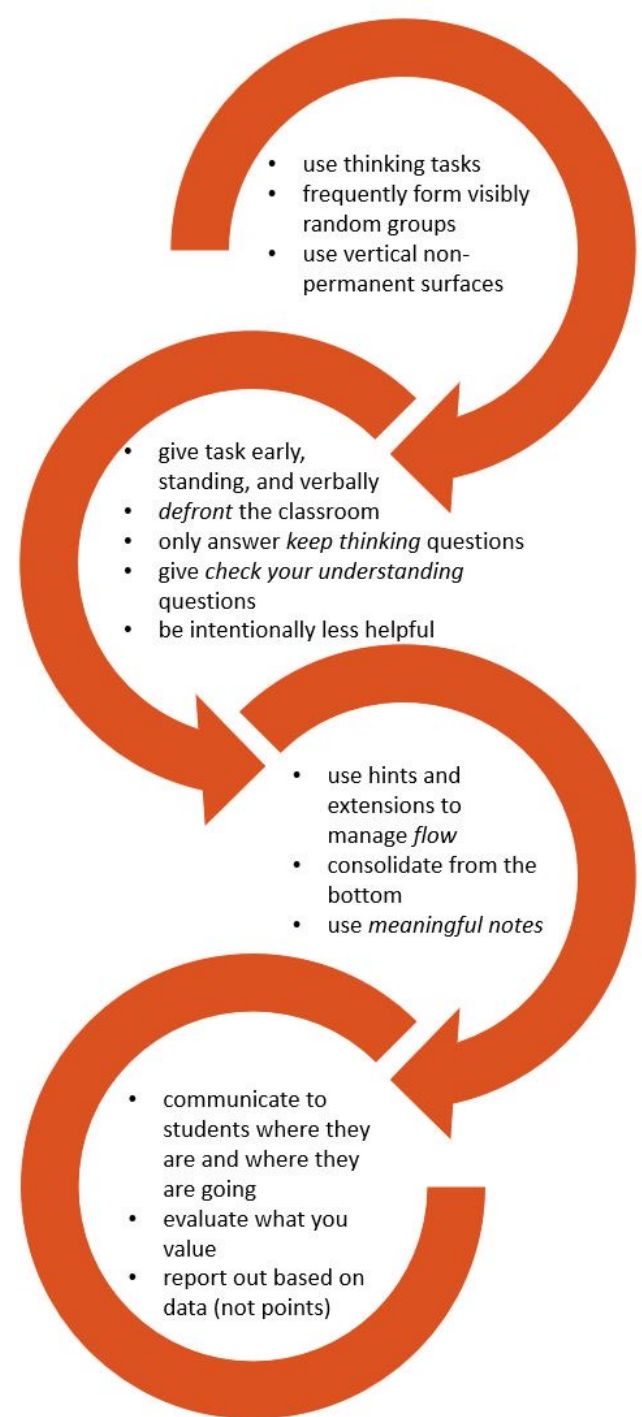


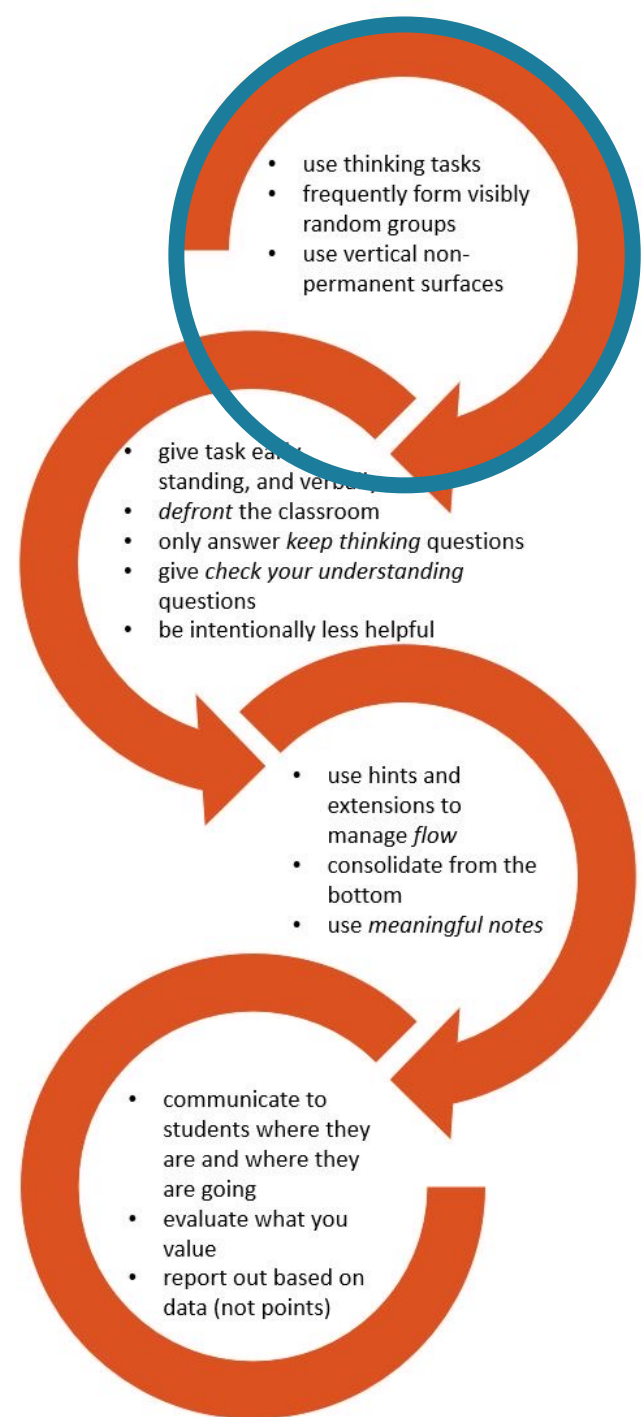
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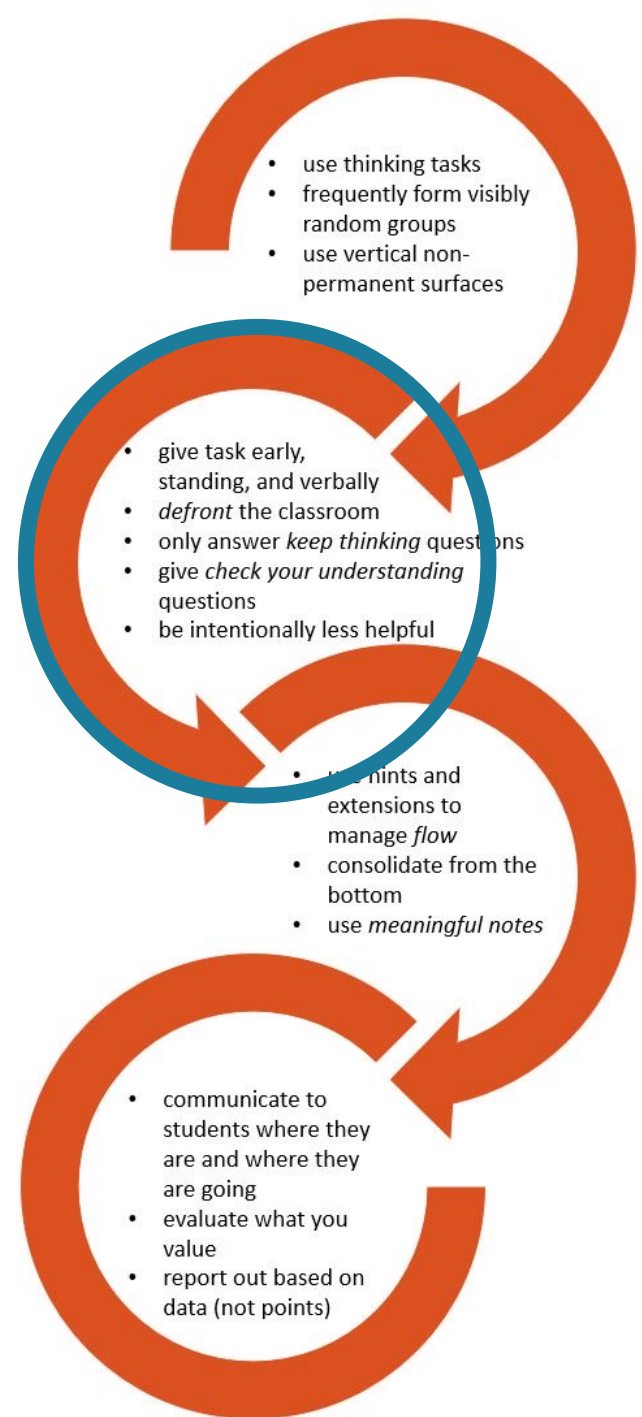
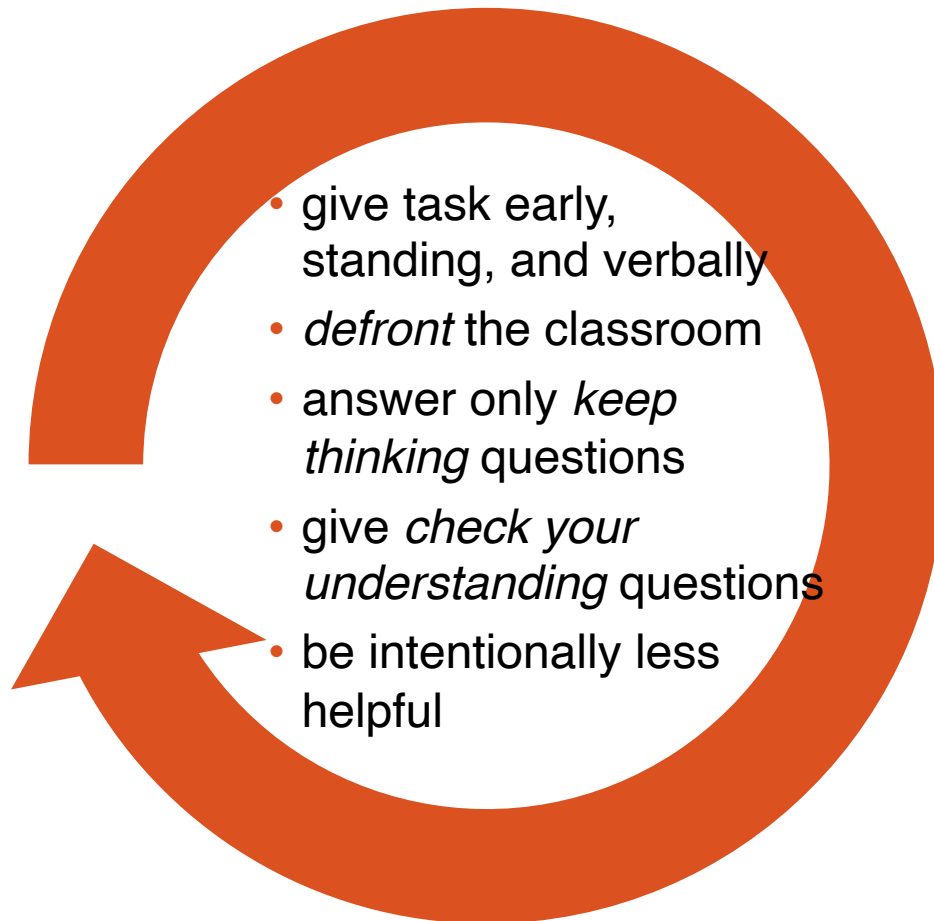
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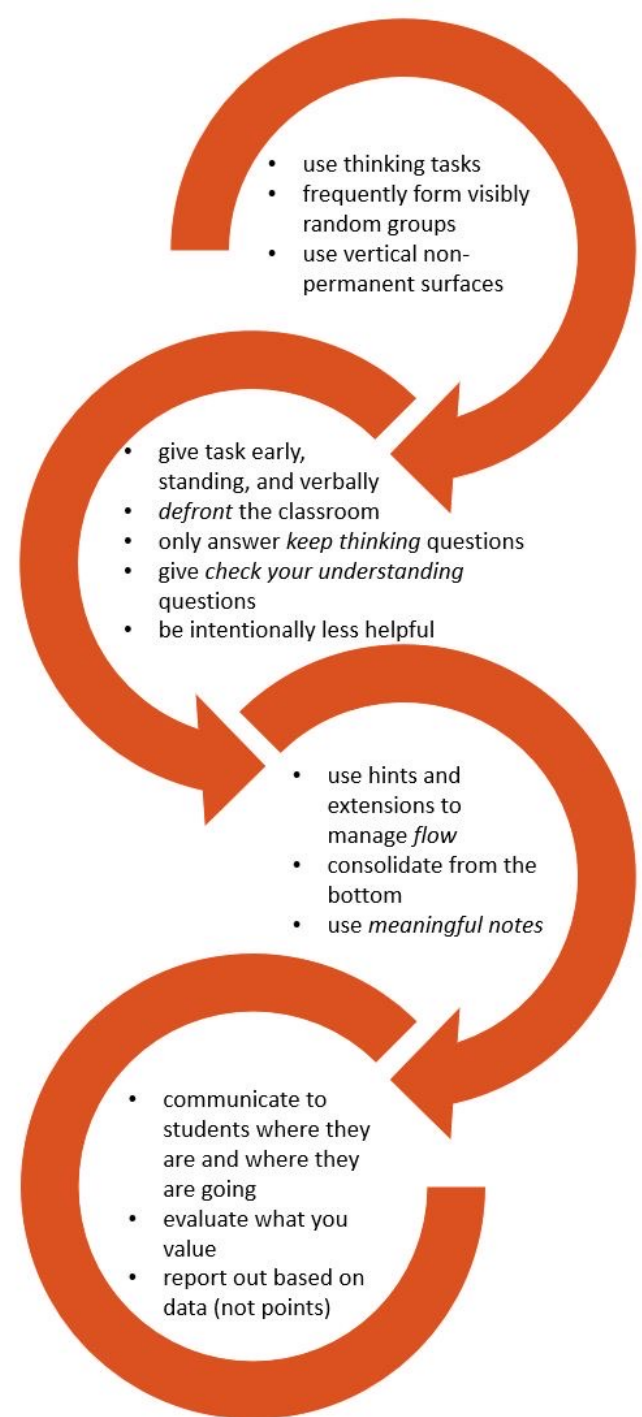
WHERE TO START?







BUILDING THINKING CLASSROOMS



CLASSROOM PRACTICES

OPTIMAL PRACTICES FOR THINKING

BUILDING THINKING CLASSROOMS in MATHEMATICS

GRADES K-12

14 TEACHING
PRACTICES
FOR ENHANCING
LEARNING



PETER LILJEDAHL

FOREWORD BY TRACY JOHNSTON ZAGER

ILLUSTRATIONS BY LAURA WHEELER

CORWIN Mathematics

Use thinking tasks

Form frequent visibly random groupings

Use vertical non-permanent surfaces

Defront the classroom

Only answer keep thinking questions

Give tasks early, standing, and verbally

Give check your understanding questions

Be intentionally less helpful

Create and manage *flow*

Consolidate from the bottom

Use meaningful notes

Evaluate what you value

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THANK YOU!



@BTCthinks | #BTCthinks



Building Thinking Classrooms



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[www. buildingthinkingclassrooms.com](http://www.buildingthinkingclassrooms.com)