

# Toward a Math Classroom that is a Community of Learners

Who we are:

Teachers from Sisler High School

Melodie has taught many math courses, most recently developing love for the high school calculus course and the possibilities contained in it.

Steve has also taught many different courses and has recently completed a Masters of Education that pushed his thinking about possibilities for mathematics learning.



# Last year

We introduced foundational experiences™

We noticed that our students gained an appreciation of how to approach these open problems

But as these experiences were "front end loaded" we found that as the semester progressed the benefits wore off

Students told us that they enjoyed the experiences and felt they were valuable but we could see that we needed to make some adjustments to increase the benefits



# What did we want to accomplish?

We want our students to think more, and be bored less

We sought to create a community of learners

We wanted to incorporate ideas we have seen (thanks Heidi Howes and Sheri Temple)

We wanted this to span the duration of the course, as opposed to a limited time event near the beginning of the course.



# What is a community of learners?

- Students know the names of all their classmates.
- Students have an opportunity to learn from their peers.
- Students can work in groups on problems that explore math concepts



# What is different about a "community of learners" compared to any other classroom

Students feel empowered to wonder, and talk about wondering

Students think it's ok to ask a classmate, even when the teacher is right there

Students feel an ownership of their learning, as opposed to being forced into an externally mandated set of requirements



# A "Seed"

An idea and an activity

The idea is to plant something and let it grow

We tend to our seed(ling) and provide an environment, nutrients and sunlight to help it along.



# Pruning our growth

Students have the opportunity to take an activity in many directions, and we want to see student follow their intuition and see where it leads, however....

One of our jobs as a teacher is to direct students to desired outcomes

It can be a real struggle, especially when students are doing great things that we may not wish to interrupt, but at some point we will have to make decisions about time management and meeting objectives.

We can address this in different ways such as:

- choosing some work for follow questions

- Assigning additional questions as homework



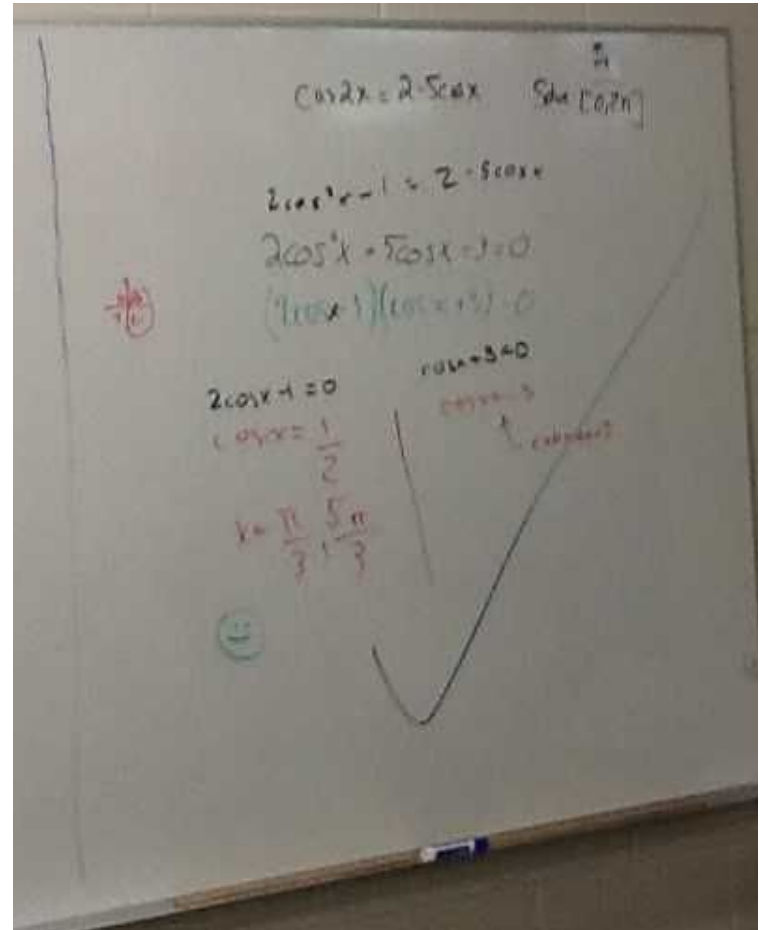
# Bits and pieces for community building

- Groups work on the white boards regularly and for every activity.
- Students introduce themselves to group members and write their names at the top of the board.
- Groups are often randomized (using playing cards).
- Groups will step back and collaborate with the neighboring group, discussing and adding “something new” to their own work.
- Students rotate among and within the groups.



# What are students saying?

-They are enthusiastic and ask for more opportunities to work together.





# What are students saying?

-They recognize that communicating their math learning and understanding is a skill that is difficult but valuable.

it forces me to teach or explain my ideas which helps me to understand more

it forces you (in a good way) to interact w/ other people.

you either solve the problem together or create another one by not communicating



## Students say... it helps their learning

-gets me out of a "path" I was stuck on and shows other possible methods of solving.

Working with people on calc. problems have helped me grasp more concepts. Sometimes having a friend talk to you, discuss and write out the problems actually helps.

When we were in our first groups for RR, I could instantly see where I needed help the most because I couldn't contribute much to help the group solve the problem. However, after that, in the second group with the trig problems, I was more into it b/c I had more practice.



## Students say... it gives them a sense of belonging

It made the class feel less anonymous.

I got to meet and interact with individuals that I may have never even talked to in the semester.



## Students say....

We saw from their responses that different kinds of students got different things from the groupings

It was still valuable to these different students

3. How has RGB (random groups on the boards) specifically contributed to:

a) your sense of community.

I get to know more of my classmates especially if they needed attention/help towards a specific topic. Also, I get to interact with them and be friends with them.

b) your learning in general.

It improved my learning since I get to know their perspective to the lesson which may be useful to know. Also, I get to understand the lesson more since everyone is contributing their thoughts about the problem.

c) your learning of related rates.

Learning related rates became lighter and less stressful since I had somebody to help me understand the topic and give some tips to easily learn it.

4. Would you describe yourself as introverted or extroverted and explain how that affects your answers to all of the above.

Introverted. Being an introvert is a struggle for me since I really dislike talking to an audience, but because of the random grouping, I feel like I'm getting better at socializing with other people and actually enjoy it. I feel more belonged to a group than I was before.



How has RGB (random groups on the boards) specifically contributed to:

a) your sense of community.

- I've gotten to know a lot of great intelligent people through the groups

b) your learning in general.

- it helps to work with people who have different ways of solving a problem

c) your learning of related rates.

- it helped a lot in understanding HOW to go about solving the problems. (seeing how others solve it)

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# Most recently

Curve Sketching!

-groups work on different aspects of the same problem







# A seed revisited

Our community is also a seed.

We would like to see it grow and develop into something more. We would love to see it flower and spread new seeds into other classrooms.

We think it needs care and attention - it won't grow on its own, and it won't spread if it doesn't find other suitable places to grow