Rough Draft Thinking ... in Math!
adapted from Kara Newhouse’s “How Encouraging Rough Draft Thinking in Math Class Highlights the Strengths of All Students”

How many dots do you see? Most of us will agree that there are eight dots on the domino, however, how did our mind group the dots to get to that conclusion? Was it by counting by ones, grouping in sets or connecting the dots? In a middle school classroom, when asked to share and justify why there are eight dots you might see and hear explanations like these:

Discussion of the justifications start from “diamond shaped thingy” to vocabulary development of parallel lines and parallelogram.

When we think about rough drafts and revision our minds usually go to writing and English Language Arts. However, there is a place for this type of thinking in the math classroom. Allowing students to create, discuss and revise in mathematics can help develop math competence and confidence. By infusing rough draft thinking into mathematics instruction, students begin to feel comfortable articulating their thinking through problem solving rather than only speaking when they have the right answer. In this approach students share their unfinished, in progress ideas with a partner, small group or whole class and are open to revising those ideas. In addition, the approach helps teachers gain access to their students’ understandings and ideas. The focus of the class changes from an emphasis on right or wrong answers to a more collaborative environment, where not only are students more willing to take risks in the messy process of learning but also feel more engaged and confident about sharing their ideas.

To see classroom examples showing some of the ways teachers can foster rough draft talk and set up students to revise their solutions, please see this article: “What It Looks Like When Students Share and Revise Rough Drafts in Math Class.”

One way to introduce and foster creative and rough draft thinking is through literature by sharing the stories of mathematicians. Enter this raffle if you would like to win a book about math to share with your students. Raffle entries must be received by Nov. 20th.

Premium Pear Deck Available to ALL Inyo County Teachers & Administrators!

Last month we introduced Peardeck, a tool to make slides more interactive and to help teachers with formative assessment. While practicing gratitude is healthy and helpful all year, November might be a good month to try a Peardeck for Practicing Gratitude with your students. If you still need to create an account, visit this website and confirm your school email address. Once you open a slide you will see that the Peardeck Add-On is there! If you need assistance with getting started you can watch the Peardeck training recording, register for a live webinar, watch a help video or contact Ilissa at itwomey@inyocoe.org.

Outdoor Programs and Classroom Resources for Teachers

We’ve been working to get outdoor programs going for our students, and though we started with some virtual lessons, our first outdoor 3rd-grade Taking Root lesson was in Lone Pine in October. We hope to start doing outdoor lessons for the other schools soon! Masks, social distancing, and more precautions are worked into the routine to ensure the safety of students, teachers, and staff. We are so happy to be getting outdoors with our students again – and our students need it now more than ever!

Other walking field programs include Eastern Sierra Watershed Project Creek Study. Since 6th grade trips were canceled last spring, we’ll be offering trips to both 6th and 7th grade classes this year. To support these programs, we send classroom kits (mostly GEMS kits). Kits are available for 4th, 6th, 7th, and 8th grade. We also have materials used in our Family Science Nights and Science Camp that we could bring to your class or possibly loan.

Get in touch with Maggie (mriley@inyocoe.org) if you are interested in doing an outdoor program or if you would like to use one of our GEMS kits for your class – we are here to help both teachers and students get outdoors and learn science by doing!
Culturally Responsive Teaching and The Brain Book Study - starting soon!

Join colleagues from around our region as we read ‘Culturally Responsive Teaching and the Brain: Promoting Authentic Engagement and Rigor Among Culturally and Linguistically Diverse Students’ by Zaretta Hammond. Each one-hour session from November through March will focus on one chapter of the book and the application of the principles presented. This workshop will be facilitated by none other than Riverside’s Molly McCabe. While the first session is November 3rd, please feel free to sign up and join the group later on, or join even if you have not read the first chapter. To register visit [https://rcoe.k12oms.org/485-194360](https://rcoe.k12oms.org/485-194360).

ICOE will provide a copy of the book to any interested education staff in Inyo county. If you have questions, or would like a copy of the book, please contact Ilissa @ itwomey@inyocoe.org.

Grateful for Learning Opportunities

2020 has brought many challenges and hardships to the education community, but one positive of this era is the increased opportunity for educators in remote areas like ours to participate in some really great, impactful professional learning opportunities. The ICOE Ed Services PD Calendar ([https://learn.inyocoe.org/teachers/professional-learning](https://learn.inyocoe.org/teachers/professional-learning)) is updated regularly with free or low cost virtual workshops. Once you have opened the calendar in your web browser, you can use Control+F to search for content you might be interested in. For example if you want to work on building student inquiry, consider joining History After Dark (applicable to ELA as well) on November 12th ([registration link](https://learn.inyocoe.org/teachers/professional-learning)); or join the Math EdCamp group on November 17th for a chance to connect with other math-minded educators ([registration link](https://learn.inyocoe.org/teachers/professional-learning)). Curious about the new arts standards? Join Louisa Higgins on November 5th for a one-hour overview of the new arts standards ([registration link](https://learn.inyocoe.org/teachers/professional-learning)). While most of what is on the calendar is free, if you are interested in attending the California Mathematics Council Conference on November 6-8, scholarships are available for teachers in our region ([apply here](https://learn.inyocoe.org/teachers/professional-learning)).

Not finding what you are looking for? Contact Ilissa @ itwomey@inyocoe.org or ext. 2197 and we might be able to provide or point you in the right direction.

Virtual CUE Conference Resources

By: Maggie Riley

The Virtual CUE (Computer Using Educators) Conference was fantastic! There was great tech shared but much more importantly, there was some great pedagogy.

Themes that emerged for me:

- Tech is not the end, but a way to reach your goal.
- Universal Design for Learning was embedded in many sessions – student voice and choice!
- Project Based Learning also works remotely!
- Culturally Responsive Teaching and centering Equity are more important than ever.

I really enjoyed sessions by “The Hyperdoc Girls,” and also Nicole Beardsley, Jennifer Wolfe, Matt Miller of Ditch That Textbook, Jake Miller, and several other outstanding presenters. I have a collection of resources (including slide decks) started from the conference that may be useful: [https://wke.lt/w/s/NqszrR](https://wke.lt/w/s/NqszrR)

Additionally, I attended the wonderful “Science is Cool” conference which is available free on Facebook Watch. If you are a Science Teacher, I highly recommend it!