Teaching Math at a Distance Book Report

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  Teaching Math at a Distance was a great book to read during these unprecedented times. Regardless if my classes will be virtual when I am teaching, it was a fascinating read about different methods of online instruction. *Teaching Math at a Distance* began by emphasizing the importance of rich mathematics instruction for all, reiterating NCTM's eight process and practice standards, as well as eight teaching practices that foster an environment for rich mathematics instruction. Theresa Wills, the author, sets the stage for the whole book by connecting practices in the classroom to online learning, and highlighting the great importance of online technologies for instruction.

  In part one, Wills begins by asking questions to the reader regarding technology implementation in the virtual classroom, and if those tools will help or hinder a students' mathematics experience. She then says how setting norms in the virtual classroom is just as important as setting procedures in the physical classroom (Wills, 2021). Beginning a class by setting rules and proper operations will allow the class to function smoothly online, and in the process of introducing them, to utilize positive reinforcement and asset-based language. She talks about the importance of agency in students' learning, as it allows for greater engagement when they have a choice in their education. Wills discusses the importance of virtual manipulatives in the online classroom, and the processes of selecting specific activities for the virtual classroom. Some activities Wills brought up to use in the virtual classroom are a math show and tell and a math congress, which can be utilized at any level (Wills, 2021).

  In part two, Wills mentions some strategies to foster strong math communities, such as a wellness check-in or fun ways to take attendance to engage students (Wills, 2021). She goes on to discuss strategies that promote student thinking, such as whole-class exit tickets, multiple choice corners, dump and develop, and blank slides, which all can be utilized in an online

setting. Then, she brings up some strategies that facilitate common routines and mathematical discourse online. She talks extensively about the Five Practices Framework that we learned about in our class, defined what it means to have a rich mathematics task, and provided some helpful tips to facilitate the Five Practices Framework through a virtual setting. Next, Wills brought up the importance of learning stations in mathematics, and how they translate to online. She restates how vital group collaboration is when learning mathematics, and she talks about how it's implemented online (Wills, 2021). She says that breakout rooms should be utilized, but start in small groups for a short period of time and work their way up to being in breakout rooms with groups for a longer period of time. She talks about different types of learning stations, such as independent-to-partner and group activities (solve and switch, collaboration cues, etc.), small group activities (how many ways can you…, modify the problem, etc.), partner games (comparee, strategy games, etc.), and guided group exploration. Lastly, she states that upon completion of learning stations, at the end of class, everyone must regroup to go over key elements from the activities to make connections of the learning (Wills, 2021).

Finally, part three of the book discussed tools for meaningful assessment and homework. Wills suggested various methods of formative assessment, such as interviews, "show me," hinge questions, and exit tasks, and she also brought up some rules to implement for online summative assessments, such as providing a list of what students can and can't do with regards to their take-home assessments (Wills, 2021). Wills also gives strategies for effective homework, mentioning an adaptation of a 3-Act task, a 3-Act video, wherein students use reasoning and problem solving at three moments to creatively reach a solution, and ESTI-mysteries, in which students create a task using clues that are given as a guess becomes more accurate. Wills concludes the book by asserting her most important points, that starting slow and setting norms

at the beginning of a class is key, using technology helps keep a lesson student-centered, and to keep pedagogy at the forefront of instruction (Wills, 2021).

Whether reading previously-learned concepts or finding out something new, I took a lot away from this book, whether I agree with the author or disagree. With regards to part one of the book, I full-heartedly agree that equity needs to be a focus that all educators should advocate for, especially in times where instruction is moved online and those students who are already at a disadvantage are even more negatively impacted when their access to technology is limited. I also have previously learned about the SAMR model in another class at Duquesne, and I believe it's a great tool to go off of when selecting classroom technologies. Wills' discussion on student agency resonated with me, as I believe that students should have as much choice within their education as possible. When students are given choice, it separates learning for fun from learning for a test. By implementing activities such as a math discussion or meaningful open-ended questions, students are more engaged in their learning. Building off of this, Wills discussed different activities that are beneficial in the online setting. One activity that I liked for any grade level is a math congress. In this, students can debate mathematical procedures and concepts, allowing them to voice their opinion (which brings in the topic of agency in learning). A math congress can be utilized for discussing algebraic or geometric proofs, and this can be done in a variety of ways. Another activity that I can see implementing into my classroom are games. Students' eyes light up when a Kahoot or a Jeopardy game is brought into a lesson or review. I will utilize games for review sessions for exams, as it brings competition and fun into a class.

In part two of *Teaching Math at a Distance,* Wills talks about strategies to build strong math communities, and one way that I will do this is by doing either a beginning- or end-of-class poll, which I will utilize for attendance purposes. I will also add a "well being check" into the

poll to make sure students are being heard and can have a space to tell me anything. Next, I

really like Wills' idea of utilizing blank slides as a way to promote student thinking. By this,

students each receive a blank slide to fill in with prior/learned knowledge to be used as a pcheck

of what students know prior to the start of a lesson, or as a summative assessment tool. By this,

students can be creative with the mathematics that they learned, and have agency through

learning. I also like her ideas on different methods of instruction, such as "same but different",

"estimation", "which doesn't belong", and "slow reveal graphs". All of these can be

implemented at any level but I can see myself using these methods in my classroom. I agree with

her views on discourse through rich tasks, as that chapter discusses the Five Practices

Framework that we've learned about before. Finally for this section of the book, I like Wills'

ideas on learning stations and the different activities mentioned before in this paper. However, I

do not necessarily agree with her usage of breakout rooms. It's evident that when students are

placed in breakout rooms online that little to no work gets done, and often the work isn't evenly

distributed. The only way in which this can be regulated is by the teacher monitoring all breakout

rooms, which is not currently possible. I believe that breakout rooms can be utilized for small

discussions, but not for entire class periods and large assignments.

Finally, in the third part of the book, Wills' discusses assessment, in which I appreciate

her ideas for formative and summative assessment. I also loved her idea of a 3-Act video for

homework, which allows students to bring creativity into their homework by determining an

objective, finding real-world applications, and filming a video, which reiterates concepts within a

student multiple times. I also am seriously considering making use of a flipped classroom when I

teach, where I would record lectures for students to watch at home and allow them to work on

homework in class. This way, I can be utilized for a whole class period for questions and concerns.

Overall, *Teaching Math at a Distance* was a very beneficial book to read for this class, and I believe it is a good read for any math teacher. Even when the pandemic is over, this is a great selection for anyone conducting an online class, as this book provides some great insight into online routines and practices.

References

Wills, T. (2021). *Teaching math at a distance, grades K-12: A practical guide to rich remote instruction*. Thousand Oaks, CA: Corwin, a SAGE Company.