

The Joy of Data Science: An Avenue for Equity in the Classroom

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Data Science Thrives as Students Begin at Multiple Entry Points

Multiple entry points could be a math teacher's bane of existence. How do I make this course relevant and successful when students come in with such varied experiences? In all of our courses we struggle to find this sweet spot for our students. Four years ago I embarked on a journey to bring Data Science as a full high school course to our district and state. At that time I knew it was good stuff, but little did I know how good!! Fast forward to today. I have classes filled with 35 students from various backgrounds -Special Education, English Learners, AP Calculus, Max at Integrated 2, Computer Science, Math Lacklusters, Math Whizzes - all sitting side-by-side thriving, learning, and sharing their expertise with the others. The playing field is leveled. How, you might ask?

Regardless of formal training, all students come to the class with something they are experts in. Everybody has had experience with data. Whether they are keeping track of grades, baseball stats of their favorite team, watching COVID numbers on a graph, competing in video games, playing Pokemon, or tracking musicians, they need to know how to read, interpret, and apply knowledge the data has presented to them. There is a natural curiosity when current, relevant data is put in front of students.

One way to further this natural curiosity is to allow students choice in topics to research. Early on in my course, students select a dataset in an area of their interest. They learn all of the data analysis skills in a class common dataset and then practice these skills on their own dataset. They usually bring background knowledge to the choice of this dataset. Then they add to that knowledge while analyzing and organizing their data. Here is where it does not matter the entry point. Students come alive and can hardly wait to share their new-found information with others in the class. Students already with high-level critical thinking and/or high-level computer programming skills, expand and progress in those skills. Students bringing in no computer programming abilities or lower math skills, become masters at using programming and critical thinking to answer their research questions. Regardless of the background, students present findings as the expert in this topic. Everyone's an expert, and everyone learns from others in areas outside their ring of experience.

Bottom line: The course is welcoming to all students naturally, and personalized learning is inherent in the material and design. Regardless of their entering background, students find they are masters at data collection, analysis, and presentation by the end of the course.

Another way to foster this diverse community is with the types of assessment used. In a future article I will share links and specifics. Generally, I use Google Forms or Flipgrid videos each week posing open-ended questions from the week. Students become masters at the "Notice and Wonder" skill. They write of their notices and wonders from the previous week's learning. Each student may have picked up on something different. They demonstrate confidence as they share from their own learning. They also are posed with specific curricular questions, but they connect to their personal work of the week, making it much safer to share. Peers watch the videos and comment back in regards to the learning each is making on these skills.

In a series of articles for this newsletter, I will share some strategies and lessons learned as I have taken this Data Science journey. It truly is a joyful journey. I hope you get excited to give it a try in your classroom.

Joy Straub teaches Data Science, AP Statistics, and Integrated 3 Math at Mission Vista High in Oceanside, CA. This is her 34th year in education having taught 5th grade, middle school math, administration, and now high school math. She was an engineer with General Dynamics prior to teaching. This engineering background has come full circle as she teaches Data Science. Her passion for Data Science has led her to mentor and consult with schools across the nation. Please check out her website at datascience4schools.com for more blogs and contact information.