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Forward-Thinking Orientations for Mathematics Education

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NOTES FROM THE FIELD

Navigating the Pandemic through Interdisciplinary Collaborations

Estefania Hereira
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To alleviate how disoriented students and teachers felt navigating the isolating online environment, we merged our Mathematics, Computer Science, Media Arts, History, and English courses into two: Humanities and STEAM. The new interdisciplinary curricula allowed new pathways for student choice and ownership over their learning.

I co-designed four projects with my student teacher and the Media Arts teacher. For one of the projects, students engaged in reading music and composing songs through a trigonometry lens. They sketched the sine curves of selected musical notes and worked in groups to understand how the functions' parameters relate to sound. Students who focused on music for their culminating project designed an instrument using simple art supplies, household objects, Scratch coding, and Makey Makeys (an electronic circuit board that connects the keys of a computer to conductive materials). They explored how songs and instruments fulfill specific human needs like building connections, strengthening memory, relieving stress and anxiety, making information accessible, and sharing truths. They found images to create metaphorical sketches and physical prototypes that would convey a sociopolitical issue. After several iterations, one student designed a 6-key piano prototype out of cardboard, printed dollar bills, copper tape, and card-

stock to express economic inequities. He cut the dollar bills in proportion to the 2019 median weekly salaries of native or foreign-born Black, LatinX, and White populations in the United States.

In a written reflection, one student shared that "Doing projects in STEAM taught me skills such as critical thinking and connecting to the real world. It's not just about solving numbers; it's understanding the language of math in different forms." Another shared, "It works so good. You are taking the different subjects at the same time and crazily finding a way to combine them. The projects are not only used once and are just there to pass. They become drafts for bigger projects. They have a meaning—change your society, make it better, and find a solution to delete injustices we have been facing."

The devastating reality of COVID forced us to release all preconceived notions and depend on the people around us. My team and I created meaningful educational experiences in which our students had a say. My instruction was headed in an interdisciplinary direction for many years, but the pandemic pushed me to explore this approach. Some may perceive this year as an educational "failure," but it was more like what my student said about STEAM: "It's kinda hard at the beginning because it's pretty innovative. But we overcome it, and when all the pieces start to come together, it is very satisfying."