

Inaugural ICRSME Virtual Conference: The Implications of COVID-19 for Science and Mathematics Education

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In the Spring 2020 [editorial](#) (Bloom & Quebec Fuentes, 2020a), our first after assuming editorship of EJSME, we announced that the sixteenth consultation of the International Consortium for Research in Science & Mathematics Education (ICRSME) would take place in Spring of 2021. Soon after publishing the editorial, however, we realized our plans would have to change. In March of 2020, we traveled to Panama to meet with potential education collaborators and to scout out locations for the consultation presentations, hotel accommodations, and local dining and entertainment options. When we arrived in Panama, Coronavirus was still largely contained in China and other eastern countries and had not yet been detected in Panama. During our visit, Panama experienced its first case of COVID-19 and schools across the country were immediately closed ([GardaWorld, 2020a](#)). We returned to the U.S. just days before Panamanian officials suspended all international air travel into or out of the country ([GardaWorld, 2020b](#)). Because of the long-lasting, global impact of COVID-19, we announced in our summer [editorial](#) (Bloom & Quebec Fuentes, 2020b) that we would, instead, host a virtual conference.

The virtual conference took place March 20, 2021 with over 140 registered participants indicating that, despite setbacks, ICRSME friends know how to be flexible. During the opening session of the conference, we shared an image from a beach near Panama City depicting the night horizon over the Pacific Ocean (Figure 1). The lights in the distance were ocean liners lined up in a queue, waiting for their turn to pass through the Panama Canal. Each night they would line up and wait ... and wait... and wait. Over the past year, we have all had to practice the art of waiting. We have waited to return to face-to-face instruction, to socialize with friends and family, and to get vaccines. The ICRSME XVI Consultation will take place, but we will have to wait a bit longer. Because of uncertainties such as travel restrictions, vaccine availability, and university finances, among many others, we are planning to hold the consultation in Panama in Spring of 2023.

As we indicated in the summer editorial, however, we see the challenges presented by COVID-19 also as an opportunity to grow ICRSME participation and further strengthen the ties between ICRSME and EJSME. Throughout its history, ICRSME has held consultations roughly every other year; we now hope to fill these gaps with virtual conferences. During this past conference, we had [24 asynchronous presentations](#), which are available for your viewing on our [website](#), as well as 27 synchronous round table discussions that occurred during two breakout sessions, addressing an array of aspects related to mathematics and science education. We were pleased to have international participation from countries around the globe including Australia, Ghana, Germany, Netherlands, Panama, and South Africa.

Figure 1*Ships Waiting to Pass Through the Panama Canal*

In addition to ICRSME participant presentations, we also had four fantastic [plenary sessions](#). The theme of the conference aligned with the foci of the editorials published in 2020, namely the gaps in science and mathematics education revealed by the COVID-19 pandemic; ways in which science and mathematics educators were adapting their instruction to deal with the pandemic teaching conditions; and ways in which we, as educators, can address the growing public distrust in science and mathematics (Bloom & Quebec Fuentes, 2020b, 2020c; Quebec Fuentes & Bloom, 2020).

The layperson must possess knowledge about the natures of science and mathematics in order to make sense of complex, data-rich scientific phenomena, whether it be the current COVID-19 pandemic, genetic medicine, changing public health recommendations, or climate change. The first plenary session, *Sunk Shore: Exploring the Public's Relationship to Data through Climate Science*, featured Carolyn Hall, marine scientist, science communicator, and professional dancer. She described a [walking tour](#) “into the future” of Manhattan, New York, offered by the non-profit organization [Underwater New York](#), that engages the public in thoughtful discourse about climate change and the potential local effects that could result over time. Daniel Alston, Assistant Professor of Elementary Science Education at the University of North Carolina at Charlotte (and EJRSM Associate Editor) described how science and mathematics educators can engage their students in ways that address the challenges that Carolyn overcomes in her work communicating data-dense science to non-scientists.

In the second plenary, *Interpreting and Understanding COVID-19 Data*, Cameron Byerley, Assistant Professor of Mathematics and Science Education at the University of Georgia discussed how media representations of COVID-19 data are often misleading or misunderstood by much of the general public. Based on knowledge gained through conducting interviews about citizens' interpretations of COVID-19 data and their representations, she and her research team at [COViD-Taser](#) are developing ways to represent such quantitative data so the public can better understand the meaning behind the data and can use this knowledge to make informed decisions regarding their own health and that of others with respect to the risk of contracting COVID-19 and the COVID-19 vaccine. The team's work also has important implications for the teaching and

learning of mathematics, specifically related to relative size and the interpretation of slope in linear and log-scale graphs.

The third plenary, *The Science Behind SARS-CoV-2 and COVID-19*, was delivered by Dr. Daniel Janies, the Carol Grotnes Belk Distinguished Professor of Bioinformatics and Genomics at the [Bioinformatics Research Center](#) and Dr. Ian C. Binns, Assistant Professor of Elementary Science Education, both from the University of North Carolina at Charlotte. During this interview-style session, they discussed the nature of science (NOS) in context of coronavirus origins, countermeasures to disease spread, evolution of viral variants, and ways to address misinformation regarding COVID-19. They also fielded questions from the audience, many of which pertained to the current roll out of the various COVID-19 vaccines and the potential of reaching herd immunity through vaccination campaigns.

In the final plenary session of the day, a panel of colleagues shared *International Perspectives on the COVID-19 Pandemic*. The panel consisted of:

- Nadia De León: member of the National Research System, currently affiliated at Instituto de Investigaciones Científicas y Servicios de Alta Tecnología and Universidad Santa Maria la Antigua in Panama;
- Ebenezer Ageh: petroleum engineer who has taught chemical engineering, mathematics, and physics in Nigeria;
- Patricia Morrell: Head of the School of Education at the University of Queensland, Australia;
- Gabriela Jonas-Ahrend: faculty at Paderborn University in Germany, where she is a member of the “Fachgebiet Technikdidaktik” (technical didactics); and
- Forrest Bradbury: lecturer at Amsterdam University College, Netherlands for introductory physics, applied mathematics, energy science, physics lab courses, nanoscience, and the Maker Lab course.

The panelists shared their personal experiences with COVID-19 in their context, including issues such as the government’s response to the pandemic, the variable impact on different sectors of the school population, implications for pre-service teacher education, and adaptations to instruction to accommodate remote learning.

All of the various activities that occurred throughout the virtual conference could not have happened without support. In particular, we would like to acknowledge Ellie Stackhouse, Texas Christian University (TCU) graduate student and ICRSME treasurer and conference coordinator; Jonathan Crocker, TCU graduate student and EJSME managing editor; and Patrick Herak, ICRSME website designer. We would also like to thank the 12 EJSME Associate Editors that moderated conference sessions: James Álvarez, Stacey Britton, Stephen Burgin, Malcolm Butler, Danxia Chen, Rita Hagevik, Hayat Hokayem, Chris Long, Cherie McCollough, Samuel Otten, Julie Westerlund, and Robert Wieman. We greatly appreciate our gold sponsor, Andrews Institute of Mathematics and Science Education, and the support of our home institutions, Dallas Baptist University and Texas Christian University, for professional leave and graduate student support, respectively.

Based on the success of the 2021 virtual conference, we are already beginning to plan another for Spring of 2022. We hope you will consider participating and that next year we can expand even further around the globe to increase our international participation. More details will be forthcoming through EJSME, the ICRSME website, and the new ICSRME Newsletter.

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