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Sustaining critiques and new directions

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Sustaining critiques and new directions

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Welcome to the third and final issue of our themed series *(Re)Considering STEM education.* As co-editors, many thanks to the anonymous reviewers and leadership and editors of *Critical Education* for sustaining the critique of STEM Education and supporting our collective inquiries into a better vision for curriculum and practice that matches 21st century social and environmental challenges. This final issue builds and extends work from the first and second collections of articles, appearing as Volume 8 Issue 15 (2017) and Volume 9 Issue 16 (2018), respectively. As in all issues, we aimed to offer a space for clear critique of the false and empty promises of mainstream STEM Education scholarship, from its unwavering belief in superiority of STEM over other knowledges to the vain utterances of equitable STEM instructional goals, and its countless other pitfalls. In this issue we provide three new pieces that continue to push STEM Education outside its mainstream discourses from authors who live within but push a the boundaries on a daily basis.

The issue begins with Bazzul, a science education theorist, who directly confronts one of mainstream STEM education's primary pitfalls. He articulates and confronts science education's refusal to engage in politics, suggesting that this status quo furthers systems of power and oppression including but not limited to white supremacy, heternormativity, ableism, social class hierarchies, and neoliberal ideology and practice. Bazzul suggests pathways forward to interrupt such a "political occlusion" in our work that, in reality, is highly political for its maintenance of social relations as they are. He also critiques the shortcomings of so-called progressive tactics that fall short in interrupting STEM's too often apolitical and highly consequential politics before providing potentialities for a political imagination that STEM can realize in the future. Although Bazzul's article focuses directly on science education, the work speaks to all aspects of STEM. As two mathematics educators, we know all too well that our work has often been rejected because, to readers in the mainstream, it appears to prioritize politics over mathematical content.

As the second article, Riggs-Stapleton offers on-the-ground realities of what it means to work in mainstream STEM education. Again, specifically as a science educator, she provides a feminist, embodied analysis of her experiences in the academic landscape. Interpersonal moments as empirical data bring to light what we theorize and feel through our work, that STEM education continues status quo social relations of power and oppression. We expect readers to resonate with her narrative inquiries and analyses on academic moments like the academic job interview and her feminist framing pointedly directs our attention to challenges that exist for scholars in the field. Giving empirical support to Bazzul, Riggs-Stapleton also analyzes moments when her politics, what she terms "humanist science research," are openly rejected by others in the discipline.

The final piece for our issue is our own contribution, bringing what is known about STEM Education's shortcomings to our collective lived-realities of the global pandemic. The pandemic has proved to be a polarizing, highly controversial, and prolonged situation. To be clear, we are by no means reinforcing vaccine hesitancy and refusal; our title calls attention to the current historical moment and STEM Education's contribution to it. Primarily we focus on how this moment reveals that even amidst the undeniable victory of science to provide a quick vaccine as strong defense to a worldwide threat to life—its structural problems, lack of access to high quality interdisciplinary and culturally relevant STEM content, as well as the curricular, pointing for example to STEM's refusal to incorporate other ways of knowing—such as diverse Indigenous knowledges—as we face social and environmental problems today. We suggest pathways forward that prioritize teaching what STEM is, as a project valuing peer-reviewed knowledges always tied to healthy skepticism that enables us to value and trust scientific consensus in our decision-making, and our everyday capacities to recognize what it is not, superior knowledge for elites to decide is important

and the masses to follow. We hope this will open the door for further thinking and critique on the ways that STEM can be seen both as a complex problem and a much-needed solution, and that the public deserves much improved opportunities to understand its real potential.

Although this will be the final issue of our special series here, we do hope that STEM scholars continue to seek out opportunities with *Critical Education* to critique STEM as well as open up its new pathways to sustain critique and offer new directions in other spaces as well. The projects we have started, as a collection of 14 articles across the three issues, are but initial developments in highly influential work to advance STEM Education for what it needs to be in these 21st century times. Thanks again to all author contributors over the past 4 years of the series and to all readers as we continue together, what we know and expect you all to agree, are the *most valuable* efforts in the discipline.