EDITORIAL

Long Live Activism and Science Education!

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There is a growing feeling in the science education community that both science and education must develop their political capacities in order to face a growing ecological crisis and widening social inequality (Tolbert and Bazzul, 2017; Bencze and Carter, 2011). It is now becoming redundant to list the reasons why, but let's just name a few: mass extinction, the rise of right wing populism and ongoing white supremacy, and growing privatisation of the natural/social commons. It seems that more and more educators are feeling a responsibility to gear their practice and scholarly pursuits to building just futures through activist work, critical pedagogies, and changing the very ethos of science education. The Journal of Activist Science and Technology Education (JASTE) supports this collective responsibility by publishing timely work of both emerging and established scholars and educators in the spirit of community and solidarity.

The journal recognizes that much of what motivates teachers and students to work toward better collective modes of living is on the level of the affective/aesthetic (Alsop and Dillon, 2018). This special issue entitled, Topologies of Activism was intended to re-centre justice education and activism as central themes of JASTE by inviting a diversity of views from the wider community. One general theme that came forward from the special issue contributions was the disconnect between the programmatic goals of science education and the institutional structure of science methods classes. Another theme that emerged was the need to specifically think about pedagogy/didactics as existing alongside an activist or critical stance. All in all, these papers show a healthy diversity of approaches to thinking about sociopolitical concerns in science education research and practice. Such diversity forces science educators to consider solidarity with different beings--students, nonhumans, researchers, etc.-- who do not think like us, interact with the world in the same way... yet nevertheless share common spaces and experiences in the world. Since all beings share some aspect of the material and social commons (Hardt and Negri, 2000); educators need to begin acting like solidarity is one of the default ontological/axiological positions of our shared world(s). And if so, activism is intricately tied to this fundamental aspect of being (solidarity) such that educators can resoundingly say: Long live activism in science and technology education!

To introduce the special issue we will give a brief introduction to the papers, and very briefly discuss the pertinent and pressing questions they raise.

Science Stand

The first article by Luis Paulo de Carvalho Piassi et al. discusses a Brazilian outreach initiative called “Science Stand” (for short), which connects science learning to pressing local issues and marginalized communities. One of the interesting aspects of Science Stand is that it provokes conversation between undergraduate students of science and diverse members of the general by engaging in demonstrations and playful activities. Its goal is to make science more accessible to those in low-income neighbourhoods by actively involving them in enjoyable, unique, transdisciplinary and interactive experiences. Such work is inspired by the lifetime work of Paulo Freire and a dialogic (and dialectical) approach to integrating science into everyday life. The reflections of the young creators of the various strands of Science Stand present
some of the important nuances of doing science-in-community work, as well as the hardships and inspirations that come with working with historically marginalized communities.

Science activism in our own backyard

Alberto Rodriguez’s article about transforming STEM education courses takes a serious and focussed look at the difficulties of one basic operation in preservice teacher education: implementing what is learned in science methods classrooms in internship/practicum placements at affiliated schools. One would think that there would be a modicum of continuity of culturally engaged and justice focussed science teaching transferring into practical contexts, of which the university has some institutional connection. Using personal experience, reflections, and documents such as emails, reports, and policy (some of which is not included in this version of the article), and drawing from Michel Foucault’s ideas of ethical self-reflexivity as a mode of resistance in the face of oppression, Rodriguez describes his self-reflexive struggle to find an ethical way through an institutional quagmire of platitudes, compromises, and practices of silencing. Rodriguez’s piece reminds science educators and researchers of the power and importance of positioning ourselves within our scholarship—whether the research be based on ‘the self’ or communities. It very much matters how educators take the time to think, feel, and act relationally and reflexively with their justice oriented work.

Motivation and Socioscientific Issues

EJ Karetny’s paper is a call to relate student motivation in science and environmental science education to socioscientific issues. Indeed what better motivator, than issues of collective existence to get students interested in science and environments? Karetny’s work broaches the almost taboo concept of morals in science. While science and ethics are often paired together, moral reasoning or sensibility, which is more intimately tied to questions of right and wrong and deep personal conviction, is seldom explored in mainstream science education (recognizing that the difference between morality and ethics is varied depending on who is speaking about them). Karetny’s article contends with a very salient issue for those educators interested in justice oriented science education: at some point educators need to depart from the frameworks of government, STEM, and even SSI frameworks, in order to get at serious moral and ethical questions in science education today.

Thinking big about computational thinking

This issue of JASTE also includes an article that addresses access to computer science education, for particular marginalized youth, specifically groups that are non-white, non-asian, and non-male. Rouhollah Aghasaleh, Patrick Enderle, and Anton Puvirajah do not shy away from the different contexts in which Latinx students find themselves in an age of populism and white supremacy. A way to resist the oppressive forces that differentially constitute the subjectivities of students (along the lines of privilege, dominance, race and sex/gender) is to allow students opportunities to participate in collective knowledge production. What these authors stress however is a conscientization that goes along with informal learning; and these happen through acts of authentication that move students toward ‘being subjects’ with knowledge relevant for their own emancipation. From feminist standpoint theory the authors maintain that projects related to Black Lives Matter, Donald Trump, and sexual violence are, at the very least, just as valid as projects related to global warming, engineering, and robotics. The article focuses on the experiences of three pre-service teachers and their experiences with a sociopolitically engaged STEM education framework geared toward computational thinking.

Didactic modelling for socio-ecojustice

Science education outside North America is often framed in terms of didactics or ‘scientific’ approaches to teaching and learning. Jesper Sjöström’s article attempts to elucidate a clearer vision of what a justice-oriented didactic approach could offer science educators. Add to this the German concept of Bildung, which has several nuanced explanations, one of which might be how theory and practice meet in self-reflexive and self-transformational ways. How do social justice frameworks therefore embody a didactics of science education (a scientific approach) for social justice? The question is: what would go into such a framework that claimed to satisfy the cultures and expectations of didactical reasoning? Sjöström draws from Vision I and Vision II science, as well as critical concepts like emancipation and subjectivation to attempt this important synthesis. A major question that Sjöström faces in this article, both implicitly and explicitly, is the following: How is it possible to make an ethically and politically engaged science education that can also be expressed as a ‘science’ of teaching? Why might such a didactical model, as a unique approach to science teaching, be absolutely necessary as part of the overall effort to create better futures through science education?

**Going Up Against The Borg™**

Lastly, Larry Bencze, one of the founding editors of JASTE, brings the context of neoliberal global capitalism into the context of science teaching and learning by suggesting that science educators need to think expansively about the meaning of teaching and learning under capitalism. STEPWISE is the framework Bencze uses to outline how a teacher might engage science teaching and learning for the wellbeing of communities and individuals. However, Bencze also notes that the possibilities open to science teachers often reproduce economic disparity and keep particular hegemonies and hierarchies in place—specifically those possibilities that involve individual actions or ethical concerns that are in the interests of capitalist (re)production. Bencze puts forward the thesis that science educators should begin to levy and employ similar technologies of power, communication, mediation, and valuation that capitalism uses, such as various kinds of networks and commodities, to ‘fight the battle’ against capitalist interests in science education. One of the strengths of Bencze’s contribution is precisely the expansive thinking required to imagine the ontological realities of capitalist relations—they are both terrible, unavoidable and largely constitute the space where educators live and work.

We, the editors, hope that JASTE always remains a place to take up the ‘community of the question’ of activism and science education. As well as all the messy-good affective, political, pedagogical, and material considerations that come to the surface when doing justice-oriented work in education. Long live the expansive relationships between equality as a radical democratic principle and science education!

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**References**


