

## EDITORIAL:

### Beyond the confines of matters of fact

STEVE ALSOP & LARRY BENCZE

salsop@edu.yorku.ca, larry.bencze@utoronto.ca

#### Responses

Please consider writing a response to this paper in the WePaste forum for JASTE 1.1 ([www.wepaste.org](http://www.wepaste.org)).

Education is imbued with importance when it is framed in response to deepening social and environmental injustices. With such a positioning, it grows – rising above circumscribed daily enactments to become an entity of pressing global concerns, an expression of future possibilities and a point of entry onto a growing canvas of humanity. Now a series of questions seem to follow. In response to contemporary times, what insights might be drawn from education research and practice? How might our practices evolve in response to global and local concerns? What might we learn for, and from, existing work in our field(s)? How might we gather together our epistemic resources to act wisely?

With such lofty agendas in mind, we are delighted to introduce the first issue of the *Journal of Activist Science and Technology Education*. We accompany this introduction with an open invitation to join in the conversations (in the associated discussion forum – WePaste) and encourage you to consider submitting an article either through this forum or email. JASTE appears at a time in which the number of journals and books in every field has grown to such an extent that it can appear overwhelming. We discussed at length the merits of adding to this saturation. In creating PASTE, above all else our desire was to create a forum for participation and collaboration. We saw it as a venture that would inform and enable conversations about, and for, three themes we've identified; that is, *Disclosing* (e.g., deconstructing common, but possibly problematic practices in school science), *Mobilizing* (e.g., organizing groups of activists interested in orienting science and technology education towards promoting the common good) & *Celebrating* (e.g., highlighting models of activist successes). The audience that we had in mind includes educators, students, scientists, environmentalists and activists – in fact, anybody with an interest in fundamental changes to science and technology education that might help contribute to improvements in the wellbeing of individuals, societies and environments. The journal is open-source in so far as all articles are copyright free and we hope they will appear in other formats and venues. We refer to the journal as 'community-reviewed' to offer a twist to the academic predilection for peer reviewing – the articles are presented here as sources for community discussion and commentary. We thank the contributors for their insightful and thought-provoking articles as well as their willingness to enter into what we hope is an evolving ongoing conversation.

This is the first Journal to our knowledge that brings together science, technology and activism. Our choice of the term activism is wrapped up in a series of imaginaries that might be captured through a variety of definitions each holding their own etymologies, nuances and fine semantic tuning. At the heart of such distinctions is the desire to bring about change whether it is social, political, economic and environmental. The Oxford dictionary defines activism as a 'policy of vigorous action in a cause, especially in politics'. Other definitions cast light on the agent, the one who is politically active in the role of a citizen, campaigning for social and environmental transformation. We chose the term activism in part because of its socio-political and ecological orientations. It seems to offer an uncomfortable (perhaps?) contrast to business-as-usual. Teachers as activists' rubs up against the prevalent institutional imaginary of functional instructors set free from any moral and ethical commitments and distractions.

In our work, Shrader-Frechette (2001) reminds us of the dangers of simply being too scientific: 'Just as medical doctors ought not be so scientific that they neglect advocacy for their patients, so also ecologists ought not be so scientific that they neglect advocacy for the planet....'. In this regard, our use of the term activism hopes to disrupt the idea(l) that science and technology educators should remain so 'scientific' and 'educational' that they ought to lose sight of the world, including any possibilities for actions that they might embrace. The vision of William Blake's painting<sup>1</sup> of Newton springs to mind. The naked man at the bottom of the ocean entirely absorbed in measuring geometric shapes, while the beauty, delight and virility of the ecology that surrounds him remains out of mind's eye. Science and technology education, we believe, grows when it helps learners and teachers come together to look outward to the world and inward to the needs, hopes and the possibilities of change. Such considerations elucidate a shared hope that 'knowing well' and 'doing well' are ultimately entwined, wrapped in an expression of education that is more than covering the basics for future study. This is not to slip into a much rehearsed debate about the relative merits of pure or applied knowledge, but to assert the constitutive features of knowledge and action, and the axiomatic foundation that there is overwhelming educational merit to be found in the dialectic between learning well and acting wisely.

To use Latour's distinction, our praxis as educators should never let slip 'matters of fact' from 'matters of concern'. In contemporary society this seems especially important. We are all increasingly cognisant of the ever more dangerous lives that we lead, the ways in which objects that we now encounter are frequently associated with health risks. Take for example, food. Vegetables at one point were considered the nutritional necessity featuring large on all school science diagrams of essential food groups. Now they have become the focus of intense discussions regarding their long-term risks linked to non-organic, genetically modified production and preservation. The point here - as Beck (1986) makes clear - is that this change cannot be reduced simply to statements of rationality and trust, but it speaks to wider expressions of how things have changed in the risk society. It is 'matters of concern', rather than 'matters of fact' that increasingly populate the public sphere. And local and global concerns are multiplying. In contrast, however, children's everyday experiences with institutionalised science and technology education continue to be a story of facts. This is not to dismiss recent hard-fought curriculum changes with STSE orientations. Indeed, there is much to celebrate. But there is still a long journey ahead; the intractable natures of daily performances still gravitate longingly to the products of bygone ages - the epistemic treasures and delights of long past centuries. This is not an argument against history, to turn our backs on our own education as well as the conjectures of the geniuses that we studied, Newton, Boyle, Carson, Darwin, Curie, Feynman and so many others, of course. This is not a call to abandon the laws and theories that have occupied our hearts and minds for so long. It is an argument, nevertheless, against the boy with his old chemistry set engaged in solitary pursuit of knowledge, self absorbed and entirely disconnected with modernity. Our practices cannot afford to repeat the same experiments over and over again, mixing those same chemicals, when everything else has changed around us; we should not let our sphere of influence slip to a semi-historical re-enactment of our own educational experience - reducing our remit to efficiently covering dislocated facts and leaving all matters of concern to the politicians, the popular media and other moralisers.

The point that the following articles make abundantly clear is that the referent point for successful science and technology education needs to consciously push beyond the confines of the old guard. We must escape Plato's Republic, as we can no longer perform the abdications of theoretical abstraction that have long been the yearning of our status claims. Loud and powerful voices, quite surprisingly, are in support of this claim. Even a cursory glance at major policy documents shows that education is never far removed from future orientations. Such conversations cast our praxes as capable of influencing massive social and environmental transformations. The United Nations' Millennium goals include the goal Universal Education, and education features as an importance factor in many of the other goals. We are now at the mid-point of the UN decade of Education for Sustainable Development (ESD) with a high profile

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<sup>1</sup> <http://differnet.com/experience/atlarge/newton.jpg>

conference having taken place in Bonn a few weeks ago. It seems that in the context of what should be our gravest concerns, poverty, inequality, war, environmental degradation and climate change, education emerges as a potential vector of salvation. Take the keynote address at the recent World Environmental Education Congress, in which Stephen Lewis spoke passionately and eloquently (and also quite depressingly) about climate change. Commenting on the work of the Interdisciplinary Panel on Climate Change (IPCC), he concluded that it is likely that adaptation is now the only way forward. Education was the point of his departure, the final expression of hope in a talk that brought much despair. Clearly, such rhetorical gestures are demonstrable overstatements, education alone cannot hope to bring about the change needed. The weight of the world, to use Bourdieu and colleagues' language, is not, and cannot be, placed entirely on our shoulders. But between the reverence and practical realities there is opportunity for diverse and rich pedagogies of experiences and participation in which students continue to come together and name the world, exploring their place in the world through knowing and doing. In the current climate, it is not sufficient, or even adequate in the most variegated and most imaginative liberal forms, to lose sight of this possibility, to tumble into functionality and lose grip of education's potential to be part of a growing coalition with something significant to say, some type of commentary on/for the future. Such discussions, we believe, offer educators and administrators the hope of sustaining and enacting new visions, recovering desires of making-a-difference (desires that often lured people into teaching profession). In so doing, who knows we might even divert some of the excesses of the economies-of-performance that dominate so much of our lives. Big picture thinking offers the possibility of breathing life into the public project of schooling by placing it in a wider social and ecological context armed with the agenda and imagination to create diverse democratic expressions of local and global innovation. Such an embodiment of education stands in opposition to systems that perpetuate personal, social and ecological injustices and instead emphasizes solidarity, responsibility and action to heal and celebrate relationships between people, communities and life on earth.

For the first edition we approached colleagues with the purpose of soliciting a healthy and diverse range of opinions on the policy, pedagogy, possibilities and hopes for an activist science and technology education. They all accepted the invitation. **Derek Hodson** opens these conversations with the exhortation of 'putting your money where your mouth is' – a call for the politicization of science education. He frames these discussions with pedagogical considerations of the Nature of Science (NOS) and STSE. As the building blocks of such pedagogy he advocates socially and personally relevant contexts, which he articulates within four-levels of sophistication.

**Wolff-Michael Roth** explains why he thinks activism is appropriate. To do so, he uses a case of some residents in his hometown who have been fighting for more than a decade for access to the water main that already supplies the rest of the municipality. He then describes and theorizes one of his research and development projects in the same municipality designed to show the feasibility of using activism as an educational context that provides school-aged learners with opportunities to change themselves while they change the world as they practice alongside environmental activists. He concludes with general reflections on *expansive* learning and the role of education in providing opportunities for individual and collective transformation.

**Michael Tan** argues that environmental education should be a topic that science educators teach. In doing so, he reviews some of the obstacles and challenges surrounding socially responsible (science) education, with environmental education as an example. Place based education is proposed as a means through which some of these challenges can be faced. He concludes with some general comments about education.

**Leo Elshof** focuses on transcending 'The Age of Stupid' by disclosing poor curricula, political ecologies and junk-science as they relate to science and technology education. His article offers a clearly articulated, hard-hitting exploration of the efficacy of technology education with respect to these axiomatic

themes. It concludes with a series of recommendation for mobilising for change and the desirability of acting inventively and exuberantly within diverse educational adventures.

In the context of some of her published essays about economic globalisation, **Lyn Carter** provides argumentation regarding learner-centred pedagogies. She claims that we need to recognise that there is more to learner-centred pedagogies than may appear. She suggests that neoliberal global discourses on education and knowledge economy have coopted humanist visions of active learning within democratic and collaborative environments to its own purposes of human capital development. We are reminded of Gee, Hull and Lankshear's (1996) point that language and ideas from other arenas give a sense of the benign to global economic development even we relentlessly move into it further (although after the events of the last few months, its anybody's guess as to where we are all heading).

**Shiv Chopra**, former Health Canada scientist (and current 'whistleblower'), argues for more sustainable agricultural practices in India, his home country, and throughout the world. Specifically, he recommends elimination from farming practices of: hormones, antibiotics, slaughterhouse waste, genetically modified organisms and pesticides. He says that the most fundamental need which is being neglected in India concerns the safety and security of food supply for all its inhabitants. It is causing serious health problems to the poor and prosperous alike. The fact that the father of the nation, Mahatma Gandhi, concluded that "India has nothing to learn from the west" was therefore not without reason. It must surely retain home rule over the safety and security of its food supply.

**Larry Bencze & Steve Alsop** consider possible adverse effects of global economization on school science practices — suggesting that, in the end, it is apparent that school science functions as a kind of 'bio-technology' that is engineered to serve interests of those controlling capital. They counter their epistemological and ideological stances through argumentative support — partly through summaries of two educational case studies (*Science and the City* and *STEPWISE*) — for *communitarianism*. Under this philosophy, knowledge is seen as historically and temporally complex, perhaps leading us to a communalist (if not altruistic) ethical position with regards to the wellbeing of individuals, societies and environments. Ramifications of these positions for science education may include: *Equity, Diversity, Holism, Breadth, Depth, Empowerment, Self-determination, Enlightenment, and Responsibility*.

**Steve Alsop, Sheliza Ibrahim and members of Science and the City** outline an educational adventure; a collective experience that sparked imagination and curiosity within a heightened awareness of naming the world and exploring roles, responsibilities and hope that knowledge might bring. The article documents and celebrates the work of an intergenerational group of researchers; elementary students working with teachers, researchers and community members. It seeks to house a variety of voices by blending the format of a zine with academic style prose.

We hope you find these articles fruitful, challenging and energising. At the top of each article, we include a call for comments on the paper. As editors of this first edition we welcome any thoughts about the broader project, PASTE, and would encourage you to offer these articles as points of reflection in the adjoining discussion forum (WePaste). We also include our email addresses, if you prefer to personalise these responses. Our hope is that these excellent articles kick-start reflections, research and actions. Our intent is to use the site in our undergraduate/graduate classes and would encourage other classes to consider joining these discussions as the school year starts in September. Our hope is to publish two issues of JASTE per year and we end this editorial with a call for submissions to the next issue. These can be of a variety of different formats — including, for example, essays, research reports, videos, visual arts, curriculum and instructional materials, argued plans for specific socio-political activism.

We leave this editorial by returning to a series of questions (four of these opened our comments):

- In response to contemporary times, what insights might be drawn from education research and practice? What might we learn for, and from, existing work in our field(s)?

- How might our practices evolve in response to global and local concerns? How might we gather together our epistemic resources to act wisely?
- What are the reasons for people to share their cultural capital for promoting the common good?
- What might we learn from sites of successful/unsuccessful resistance and transformation?
- What are the dimensions of ‘positionality’ that frame our work? How can we avoid re-enacting the self-assumed role of a Saviour?
- What, specifically, can be done to temper control, greed and irresponsibility? How, and where, might we escape the dominance of neo-liberal economies-of-performance?
- In what ways might we hope to transcend the ‘Age of Stupid’?

The authors of the following articles welcome your thoughts.

Steve Alsop and Larry Bencze

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## References

- Shrader-Frechette, K. (2002). *Environmental justice: Creating equality, reclaiming democracy*. New York: Oxford University Press.
- Beck, U. (1986). *Risk society: Toward a new modernity*. London: SAGE Publications.