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Petro-pedagogy: fossil fuel interests and the obstruction of climate justice in public education

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ABSTRACT

The corporate control of energy production and the reach of fossil capital into civil and political society can be understood as a regime of obstruction that is preventing necessary action on climate change and blocking a just energy transition. In addition to overt forms of economic power and influence, hegemonic power is central to the fossil fuel industry's regime of obstruction. Based on 29 interviews and an analysis of third-party teaching resources, this article shows how teaching practices and resources work to centre, legitimize, and entrench a set of beliefs relating to climate change, energy, and environmentalism that align with the interests of fossil fuel industry actors in Saskatchewan, Canada. We argue that these pedagogical practices promote student subjectivities consistent with neoliberal environmentalism centred on individual actions designed to insulate fossil fuel industries from criticism and dissuade young people from questioning or understanding the role of corporate power in the climate crisis. Furthermore, this petro-pedagogy intends to restrict the imagination of possible climate solutions to individual acts of conservation that fail to challenge the structural growth of fossil fuel consumption. This paper advances these teaching practices and resources as a 'pedagogical arm' of the regime of obstruction.

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Introduction

It is no longer news that the world's ecologies and species face an existential threat posed by accelerating climate change. In order to arrest global climate change and rescue a habitable earth, there is an urgent need for a planetary-scale energy transition. Without such a transition warming will exceed 2°C and the planet will face wide-scale species extinction and other serious calamities. In response, jurisdictions across the world are now developing plans for phasing out fossil fuel energy and transitioning to renewable energy economies (see Erickson, Lazarus, and Piggot 2018). In Canada, however, fossil fuel corporations plan to expand their production by 33% over today's production by 2035 (CAPP 2018). If these corporations are not stopped from realising their planned growth, Canada's commitment to the 2015 Paris targets of reducing emissions by 30% below 2005 levels by 2030 will be virtually unachievable since 27% of the country's emissions are currently derived from the oil and gas industry alone (Government of Canada

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2019). Canada is one of the world's largest three greenhouse gas emitters per capita and one of the top ten emitters on an absolute basis (Boothe and Boudrealt 2016, 4). It is also home to vast reserves of tar sands oil, of which McGlade and Ekins (2015) have estimated 85% is unburnable if global warming is to be limited to 2 degrees.

In a forthcoming book about the power and influence of carbon-extractive capital, William Carroll argues that the corporate control of energy production and the reach of fossil capital into civil and political society constitutes a regime of obstruction that is preventing necessary action on climate change and blocking a just energy transition in Canada. In addition to overt forms of economic power and influence, Carroll argues that *hegemonic* power is central to the fossil fuel industry's regime of obstruction. In this article we show how public education is a key site for securing and maintaining the hegemony of the oil and gas industry and obstructing transitions to low-carbon economies.

By analysing interviews with teachers, out-of-classroom educational workers, and third party organizations engaged with public education, we show how teaching practices and resources work to centre, legitimize, and entrench a set of beliefs relating to climate change, energy, and environmentalism that align with the interests and discourses of oil industry actors. We argue that these pedagogical practices promote student subjectivities consistent with neoliberal environmentalism centred on individual actions that insulate fossil fuel industries from criticism and attempt to dissuade young people from questioning or understanding the role of corporate power in the climate crisis. Furthermore, we suggest this pedagogy intends to restrict the imagination of possible climate solutions to individual acts of conservation that fail to challenge the structural growth of fossil fuel production and consumption. We name such teaching practices neoliberal petro-pedagogy; they are the pedagogical arm of the regime of obstruction.

The article proceeds as follows. First, we review the literature on neoliberalism and environmental education in order to describe the context of energy and climate change education and the efforts of corporations to influence society, politics, and culture through education. Next, we briefly outline our methods and give some context about the communities where we collected our data. We then turn our attention to the organizations (mostly non-profit, but fossil fuel funded) that are involved in energy and climate change education in Saskatchewan and identify a set of core narratives and ideologies that these organizations propagate in their materials and outreach with teachers and students. Turning to our interview material with teachers and education workers, we show how these key fossil fuel industry narratives are taken up and enacted in learning environments. Finally, we argue that a pedagogical practice grounded deliberately and specifically in critiques of power and collective action is imperative to transitioning from climate breakdown to energy democracy.

Literature review

According to David Harvey (2007), the neoliberal policies that have been implemented across the Anglo-American world (and elsewhere) since the 1970s can be understood as part of a project to restore class power after the post-war class compromise had diminished the share of national wealth held by elites. Education has not been exempted from these policies; it has been directly impacted by deregulation, privatisation and marketisation which have allowed for the growth of private and charter schools, private partnerships, deregulated tuition, and additional fees (Davidson-Harden and Majhanovich 2004). Moreover, market proxies and logics have been used to manage the residual public education sector, and civil society actors such as NGOs and charities have been encouraged to pick up the slack caused by budget cuts. In the current neoliberal era, schools have also become particularly vulnerable to corporate offers of financial and material support because, alongside budget cuts, schools have been subject to increased pressure to adopt new learning technologies and deliver academic improvement (Molnar 2006;

Sukarieh and Tannock 2009; Robertson 1998). More broadly, the very purpose of education has been shifted with increasing emphasis on producing human capital – standard-tested, job-ready workers to meet market demands and enhance the competitiveness of the state and capital (Brown 2015). Although public school education in Canada has been less aggressively restructured than in the United States, the neoliberal context of budget cuts, the growth of private schools, the introduction of public–private partnerships and standardised tests, and the emphasis on job-readiness have significantly reshaped public education across Canada’s provincial school systems (Davidson-Harden and Majhanovich 2004; Noonan and Coral 2015).

In addition to the above material practices of restructuring, neoliberalization has also been advanced through discourses that promote an ideology of individualism, competition, and markets as the optimal mechanisms for addressing a wide range of social issues. Following Gramsci (1971), these discourses can be understood as *hegemonic* in North America – to the extent that they have become ‘common-sense’ they are not normally subject to critical evaluation or resistance. For Giroux (2011), this neoliberal hegemony functions at least in part through a corporate public pedagogy that is an ‘all-encompassing cultural horizon for producing market identities, values, and practices (134)’. He writes that ‘[w]ithin neoliberalism’s market-driven discourse, corporate power marks the space of a new kind of public pedagogy, one in which the production, dissemination, and circulation of ideas emerge from the educational force of the larger culture. Public pedagogy in this sense refers to a powerful ensemble of ideological and institutional forces whose aim is to produce competitive, self-interested individuals vying for their own material and ideological gain’. Thus, in school (as an institution of broader neoliberal society), students and teachers consent to understanding themselves as individual competitive enterprises where agency is exercised by making a series of (social, political, financial, personal) investment decisions and choosing between products offered by the market.

While the contours of neoliberal subjectivity have been fleshed out by numerous authors, few have considered how fossil fuels are at the heart of ‘powering and provisioning neoliberal forms of common sense’ (Huber 2012). As Huber argues, fossil fuels have been central to the materialisation of ‘a specifically neoliberal cultural politics of “life”’ (300). Fossil fuels allowed for the growth of suburbs and lives lived as private (white) homeowners managing households and transporting themselves in private vehicles. In the postwar period, a new ideology of freedom emerged in the privatised spaces of the home, for which petroleum products (as marketed by fossil fuel companies) became understood as essential and unavoidable. According to Huber, the political right in the US was able to secure victories starting in the 1970s by mobilising this stratum of white suburban homeowners whose ‘politics of privatism’ denounced the redistribution of wealth and ‘government handouts’ in favour of lower taxes and an ‘equal opportunity to work hard and succeed in life’ (2012, 300). From Huber, then, we gain an essential insight about the entanglement of neoliberalism with fossil fuels. Fossil fuels powered the development of the privatised spaces and transportation of the post-war suburbs, and petroleum products (fuel, plastics, synthetic fabrics, etc.) were marketed as essential to these domestic spaces of individual freedom. Fossil fuels are, thus, materially built into the fabric of neoliberalism and ideologically tied to the hegemonic notions of individual choice and freedom.

Given the close association between fossil fuels and hegemonic notions of neoliberal freedom and individual choice, it is not surprising that environmental education bumps up against the fossil fuel industry’s ‘regime of obstruction’, which attempts to frame climate and energy issues in ways that allow for continued extraction and obstruct just transitions. As outlined by Carroll (forthcoming), this regime of obstruction includes the discursive power of fossil fuel corporations to shape norms, values and beliefs through campaigns and initiatives that ‘secure popular consent and ... coopt, disorganise or marginalise dissenting perspectives’ (19–20). Such campaigns and initiatives are often advanced by fossil fuel interests through ‘policy-planning groups, political parties, lobbies and industry groups, universities and research centres, community organizations and astro-turf advocacy groups such as Canada’s Energy Citizens’ (14).

In addition to the institutions and media identified by Carroll above, fossil fuel companies have targeted public education as a site for shaping morals and values, thereby securing consent for continued growth of fossil fuel consumption and obstructing just transitions. In Canada's premier petro-province, Alberta, Hodgkins (2010) documented an oil-backed not-for-profit's insertion of 'corporate propaganda masquerading as energy and environmental literacy programs' in K-12 education and through teacher professional development. Saltman and Goodman (2001), Carter (1988), and Trammel (2004) similarly trace direct partnerships between fossil fuel industry actors and public education through which fossil fuel companies promote messages that equate fossil fuel extraction and consumption with freedom, scientific and technological innovation, and environmental stewardship. But fossil fuel companies need not insert themselves directly into education through partnerships in order to circulate their hegemonic climate obstructionism. For example, Bissell (2014) finds that teachers in Alberta are uncomfortable teaching about the socio-political aspects of climate change because of wider hegemonic discourses that tie the Alberta economy and individual prosperity to oil; and Chambers (2011) similarly finds that teachers in oil and gas producing communities in Alberta experienced, or feared experiencing, resistance from students and parents when teaching about climate change.

The hegemonic discourses circulated by the regime of obstruction are part of a wider neo-liberal hegemony of which teaching and learning about fossil fuels is very much a part. In a special issue of *Environmental Education Research* Hursh, Henderson, and Greenwood (2015) and their colleagues suggest that neoliberal environmental discourses prioritise market-based actions (consumption) and interests and close off the kinds of collective and coordinated responses that are needed to address environmental crises. Similarly, Gruenewald (2004) criticises the institutionalisation of environmental education, which has stripped the field of its original political purpose of transforming the negative impacts human beings are having on ecological systems. For example, students now learn how to measure water quality without examining 'the cultural practices that cause and tolerate multiple forms of pollution as well as deny the seriousness of this ecological problem (86)'. Or, as Hodson (2003) puts it, environmental education often confines its analysis of the social dimensions of science and technology to acknowledging the hazards and adverse effects of development while focusing on achieving consensus and compromise between the benefits and costs of a technology. Rarely are students enabled to 'recognize that scientific and technological decisions are taken in pursuit of particular interests, justified by particular values and sometimes implemented by those with sufficient economic or political power to override the needs and interests of others' (656).

Context and methods

This research is based on interviews with 21 teachers (primarily grades 7–12), three out-of-classroom educational employees, two administrators, as well as three representatives from organizations engaged in providing resources, programming, and/or professional development related to energy and climate change in Saskatchewan. Teachers were selected based on three criteria: (1) having participated in programming provided by organizations (mostly non-profit) on topics of energy and climate change, (2) teaching about energy and climate change in rural oil-producing communities in the province and (3) having been subjects in media articles about their teaching of climate change and energy issues. The educational employees and administrators were selected to provide insights into the approaches and opportunities for teaching about energy and climate change in the provincial curriculum as well as how organizations are engaging with curricula and teachers on these topics. Finally, representatives from third party organizations were invited to discuss their strategies and goals in engaging with public sector education in Saskatchewan.

Recruitment for this research was done through a combination of methods including: non-profits contacting teachers who had engaged with their programmes, snowball sampling, contacting teachers who had appeared in media articles or online resources related to energy and climate change programming, and through referrals from previous contacts in oil-producing communities. In addition to interviews, we conducted a discourse analysis of the primary energy and climate change resources and lessons published by the non-profit organizations and analysed news articles that reported on their engagement with classrooms. [Table 1](#) gives an overview of the documents that were analysed for each organisation.

Saskatchewan is Canada's second largest oil and gas producing province. Many of our participants teach in rural communities that are dependent on oil, gas, and coal. The oil and gas industry has been around since the 1940s and underwent a recent oil boom from the mid-2000s until 2014. Our focus on teaching in these communities emerged out of previous research that showed the extent to which the oil industry shapes the everyday institutions and culture of rural life (Eaton and Enoch 2018; Enoch and Eaton 2018) including schooling (Eaton and Enoch 2017). In addition to sustaining many local communities, the oil and gas industry contributed 14.5% of provincial GDP in 2016 (Government of Saskatchewan 2018) and between 13 and 24% of total government revenue over the period 2009–2014 (Carter, Fraser, and Zalik 2017, 64). Mine to mouth coal fired coal plants contributed 40% of electricity supplied by the province's utility in 2018-19 (Saskatchewan Power Corporation 2019, p. 46).

The governing Saskatchewan Party has consistently and very publicly worked to implement fossil fuel industry's interests by reducing environmental regulations, keeping royalties among the lowest in the country, and resisting the federal government's attempts at carbon pricing. Thus, the context for this study is significant and widespread support for fossil fuels both in local communities and at the level of provincial policies and discourse. According to public polling, compared to the rest of the country, people in Saskatchewan have lower levels of belief that the earth is warming and that the warming is human-induced (Mildenberger, Howe, Lachappelle, Marlon, Leiserowitz and Stokes 2016).

The involvement of organizations in education and energy messaging

In our survey of organizations active on the topic of energy and climate change in public education, we found a range of groups engaged in developing educational resources, providing teacher professional development, and entering schools to deliver content and activities. [Table 1](#) provides an overview of the six different organizations (here-in referred to as non-profit organizations) broken into three different types that are active in K-12 education in Saskatchewan. Using a discursive analysis of curriculum materials and lessons (summarized in [Table 1](#)) as well as interviews with representatives from three of the organizations and teachers who had participated in the non-profit's programming, we identified a set of core narratives and ideologies that these organizations propagated in their materials and outreach with teachers and students. Specifically, we focused on how the non-profits framed the problem of climate change (including who and what were primarily to blame), how they framed potential solutions to climate change, and what they identified as the strengths and weaknesses of renewable vs. fossil fuel energy.

Despite the diversity of organizations involved, we found a surprising level of consistency in the narratives and messages that dominate their materials and programing. Notably, the industry-funded non-profits all promoted fossil fuel interests and perspectives as legitimate and necessary to learning about environmental issues. In fact, any learning about the environment that didn't consider the interests of the industry was considered unbalanced and biased. This, despite the fact that just 100 fossil fuel corporations are responsible for more than 70% of the world's emissions since 1988 (Griffin 2017) and that fossil fuel interests have actively stalled policies to



Table 1. Non-profit organisation involved in climate change and energy education.

Type of organisation	Organisation (date of founding)	Funders of education programmes	Engagement	Resources/documents analysed
Industry Funded Non-Profit	Energy in Action	Canadian Association of Petroleum Producers	In-classroom presentations delivered by local oil firm personnel coupled with outdoor activities in 6+ communities primarily grades 4-6. No longer in existence	<ul style="list-style-type: none"> • 3 newspaper articles • 2012 Annual report • 1 online video
	Inside Education (1985)	BP, Cenovus Energy, Suncor Energy, ConocoPhillips Canada, Canadian Association of Petroleum Producers and more	Canada's most prolific energy literacy education organisation. Provides 'curriculum-connected' resources and professional development for teachers	<ul style="list-style-type: none"> • 3 Energy Dialogues videos • Stewardship: Energy, Climate and You resources and teacher's guide • Teacher's guides • Writeups about professional development programs
	SEEDS (1976)	Per-project basis including: ConocoPhillips Canada, Imperial Oil, Cenovus Energy, Royal Bank of Canada Foundation	Provides resources on climate change and energy literacy. Runs Green Schools (an online resource that supports and recognises environmental, recycling and conservation projects done by students and teachers in schools across Canada. +200 SK schools listed as achieving Green School Status on their website in 2012).	<ul style="list-style-type: none"> • Creating a Climate of Change (7 modules) • Energy Literacy Series (11 modules) • Teaching Activities for Climate Change • Green Schools Program Resource Manual
Environmental Organizations	Saskatchewan Environmental Society (1970)	SaskPower and SaskEnergy + donations and fees from individual citizen members	Curriculum-connected programs delivered to student in classrooms in partnership between teachers and SES workers. Goal is to help youth reduce carbon emissions by reducing waste, energy, or water consumption.	<ul style="list-style-type: none"> • Video on oil sands impacts • Resources on energy auditing • Resources on campaigns (turn it off, bike, walk or board, etc.)
Publicly- Owned Crown Corporations	SaskPower (1929) Principal electric utility in SK with world's 1 st carbon capture facility on a coal-fired power plant	IPAC CO2 (now defunct organisation funded by provincial and federal governments and Royal Dutch Shell)	Lessons about carbon capture and storage developed in collaboration with the Regina Catholic School Board + IPAC CO2	<ul style="list-style-type: none"> • Climate Change lesson plans • 1 news article • Provincial education award submission • Grade 3, 7 + 10 carbon capture and storage lessons and powerpoints
	SaskEnergy (1952) SK's natural gas distribution company		Online 'Learning Centre' with lesson plans and activities relating to natural gas. Partners with SES to deliver programming for schools on energy conservation. Used to visit grade 4 and 5 classrooms giving presentation on safety and energy literacy	<ul style="list-style-type: none"> • Lesson plans related to 3 modules: Home Heating; Energy for Cars and Buses; and Energy Choices for a New Community

arrest climate change, since the establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988 (Gutstein 2018).

Accounting for the multiple perspectives at play in environmental issues often took the form of systematically identifying and role-playing all the stakeholders and their positions, with the implication that no stakeholder (e.g. the interests of the environment) should take priority over others and that there are no simple solutions to environmental issues. Explaining a particular learning resource produced by her non-profit, one of our interviewees said:

...[Y]ou have stakeholders and each issue might have 6 or 7 to 9 or 10 stakeholder representatives discuss their point of view... And it's designed so that students can do the investigations from a scientific, technological, environmental, historical, cultural, economic, and more perspectives. From the point of view of their stakeholder. And then they can come together in a town hall meeting to talk about how they would deal with that sort of issue... So even if you are an oil industry executive in one of the situations, you still are going to be exposed to the viewpoints of others and their environmental background.

While this type of stakeholder approach may seem common sense today, an article written in *Oilweek* in 1999 illuminates the 'bias-balanced' approach to energy and environment as a deliberate strategy of the fossil fuel industry. According to Jaremko (1999, 35), the SEEDS organization was revived, after its initial founding in response to the OPEC oil shocks of the 1970s, in order to address the '90s fears, which at their alarmist worst suggest continuing to burn fossil fuels will destroy the planet'. As the article explains, in order to defend itself against climate change action, the industry targeted 'the next generation of voters' through the education system. A recognition that the industry couldn't get more blatant 'propaganda' into the schools led them to develop resources and information that presented industry's perspective as one among many and as essential to fulsome learning about energy, climate, and environment.

A common strategy employed by the non-profits, with the exception of the environmental organisation, highlighted how central the products of fossil fuels are to modern life and encouraged students to reflect on the place of fossil fuels in their own lives. As Huber (2012) has documented, the fossil fuel industry has pursued a strategy of tying modern post-war life to petroleum products since the 1950s. For example, SaskEnergy consistently represents itself as keeping homeowners warm all year long, connecting the supply of fossil fuels to the privatised, wholesome, and essential space of the private home. A lesson plan in their online Learning Centre suggests students interview older family members to learn how home heating has changed in the last 100 years and to reflect on how their lifestyles are enabled by modern home heating. In another teaching resource developed by the Regina Catholic School Board and IPAC CO2 and available on SaskPower's website, students learn about the technological solution of carbon capture. The powerpoint resource includes prompts for students to reflect on how they use fossil fuels with 'using a computer, driving a car, heating homes, turning on lights' cited in the resource.

Although many of the organizations included in our sample produced some resources or professional development related specifically to climate change and energy, the groups focused their resources and messaging on more micro-level environmental issues with local relevance. This was a third strategy we identified as common among the groups, with the exception of the environmental organisation, and is a form of greenwashing (Delmas and Cuere-Burbano 2011) where fossil fuel companies and interests present themselves as engaging in or supporting environmental responsibility, while their core business continues to pollute and degrade the environment. In lessons and resources about energy or oil and gas produced by all but the environmental non-profit in our research there was a strong preference for highlighting local issues related to nature conservation over the global issue of climate change and greenhouse gas mitigation. For example, in 2013, Inside Education hosted a 3-day environmental education program for eleven Saskatchewan public school teachers. Funded by the Canadian Association of Petroleum Producers and the oil and gas companies Cenovus, Apache, and Penn West, the majority of the agenda was devoted to issues of local environmental importance including

wildlife, ranching, watersheds, native prairie conservation, and outdoor education. These sessions were delivered by local stakeholder groups including conservation and environmental NGOs, positioning the programing as balanced and including the perspectives of different stakeholders. Only one workshop in the 3-day long agenda was devoted to the perspective of the oil industry and the topic of climate change was not broached specifically, although there was a workshop on wind energy.

In another tour organised by Inside Education, this time to Alberta's tar sands, two Saskatchewan teachers reported that emissions contributing to climate change were not addressed in the week-long excursion. Instead, the environmental component focused on how tar sands companies are reclaiming and remediating mine and tailings sites after their use. In the case of Energy in Action programing, students in Saskatchewan schools were presented information about 'the petroleum industry, responsible resource development, renewable energy and the importance of preserving our natural environment (CAPP 2011)' before they engaged in building bird houses, and planting trees, fruits, and vegetables in the schoolyard. At one particular school, a representative from the local office of a Calgary-based oil and gas company presented to grade 5 and 6 students about how fossil fuels are formed, accessed, and extracted. Afterwards, the students planted trees in the schoolyard as part of an 'outdoor classroom' project funded by the oil company.

Although there were many more narratives that were common to the non-profit organizations, we emphasise a final strategy here: the degree to which groups consistently profiled individual environmental actions as adequate and appropriate responses to a host of environmental and energy issues. This was a narrative that was shared by all organizations, even the environmental organisation. When climate change and energy issues were addressed, non-profit groups almost uniquely proposed that individuals engage in voluntary reductions to reduce their personal emissions, or otherwise change their behaviour to recycle more and consume less. Indeed, in the *Oilweek* article quoted above, the SEEDS national climate change program manager, David Lunn, characterised the objective of the program as 'developing strategies, personal initiatives and actions in responding to the prospect of climate change at home, in the workplace and in transportation [choices]' (Jaremko 1999, 37).

When asked about whether their programs and resources promote active citizenship that addresses systemic or policy issues related to climate change and emissions, one representative of a non-profit suggested that such a focus could be inappropriate and contradictory if students were neglecting to address their own personal consumption:

So carrying on and driving back and forth all over the city while you're writing letters to the city council or writing letters to the government about reducing greenhouse gas emissions is - there's a disconnect there. So I think that ... students don't have the power yet to tell SaskPower how it makes its electricity. But they can turn off a light, or change it to an LED, or use a power bar or unplug stuff they're not using. So they have the ability to do those things, and they can still write a letter. We still encourage that too ... But we're pretty firmly entrenched that we can't put what needs to be done off on other people, that it needs to be us learning to do it ourselves.

Notably, the SEEDs organization, which was revived in order to fend off threats to the fossil fuels industries, has championed individual acts of conservation through its flagship Green Schools program. Green Schools is an online resource that provides ideas, support, and recognition for environmental, recycling, and conservation projects initiated by students and teachers in their schools. In 2012, the SEEDS website listed 197 Saskatchewan schools that had achieved Green School status, having each logged at least 100 environmental projects with the organisation (SEEDS 2009). The vast majority of Green Schools projects focus on recycling, waste reduction, the reuse of items for art projects, and clean-up and gardening initiatives. In a recent example found on the Green Schools website a grade 4/5 class in Saskatchewan reused punch holes left over from school printers to create art. The funders of Green Schools include several

oil and gas interests (Conoco Philips, Alliance Pipelines, Cenovus Energy, Rife Resources Ltd and Imperial) as well as other interests including banks and foundations.

Overwhelmingly, we noted that organizations promoted individuals, as consumers of resources, making active and voluntary choices in their personal and school lives. Lessons on global climate change and the environmental impacts of energy production were rarely followed by a focus on collective action or policies meant to curb the production of fossil fuels. For example, Inside Education provides an impressive array of resources on the technical aspects of getting energy resources out of the ground and the ecological impacts associated with various technologies (for instance they highlight the energy and water intensity of fracking as a production technology). However, their action-oriented learning resources centre on an energy efficiency and stewardship action kit that includes, among other things, a shower timer, LED lightbulbs, an energy monitor for individual appliances, a pedometer, a mesh produce bag, and a mini solar panel. After learning about the environmental and technological aspects of energy resources, the clear message is that reducing emissions and impacts is the responsibility of each individual and that the sum of each individual student conserving resources in their own lives will change the world.

Renewable energies were discussed in five of six organisation's materials and outreach (we had access to too few resources of, and interviewees from, Energy in Action to rule out that the programme dealt with renewables). However, the dominant narrative associated with renewables was that they are intermittent, expensive, and difficult to scale up. In this context, fossil fuels were presented as an enduring and disproportionate part of any near-future energy mix. Notably, conversations about a New Green Deal are very new to Canada, and were all but absent in provincial and national discourse in the spring/summer of 2018 when we conducted our interviews.

In summary, organizations involved in climate and energy education in Saskatchewan circulate a set of core narratives and ideologies that position the perspectives of industry as necessary to considering a 'balanced' approach to contemporary environmental issues and represent petroleum products as fundamental to modern life. With the exception of the environmental organisation, these non-profits provide their programming and learning resources on energy as part of a package of resources about local environmental issues, often ignoring or side-stepping the crisis presented by global climate change. As possible solutions and actions to address the energy and environmental problems identified by the organizations, they all propose that students engage in individual green acts in their own and school lives.

Foreclosing energy transition: enacting the narratives of industry

Non-profit organizations' success in building hegemony – that is, circulating their narratives about energy and climate change 'problems' and 'solutions' as truth – depends on teachers enacting industry's ideologies as common-sense in the classroom. In our interviews with educators we found that most teachers do not shy away from teaching about the science of climate change. A recently renewed science curriculum in Saskatchewan has entrenched a number of learning outcomes related to climate change, especially in grades 10 and 11 science. At the same time, however, teachers adopted key industry narratives that foreclosed teaching about the possibility of transitioning off of fossil fuels and entrenched an understanding of individual consumption as the primary cause of climate and environmental problems and, therefore, individual actions as the only feasible solutions. In this section we show how the industry strategies outlined above translated into classrooms.

In our interviews with teachers, out-of-classroom educational employees, and administrators, we found significant evidence that industry's strategy of inserting its perspectives as necessary components of a balanced approach to energy and climate change issues was highly successful.

For one self-described ‘tree-hugger’ and educator, who participated in an Inside Education program described above, the exposure to a single presentation from the oil industry, during a 3-day workshop, changed her perspective on fracking significantly. According to her, she ‘went in pretty like “nope there’s no way fracking is a good thing”. And I think [the presenter] did a pretty good job persuading me ... I remember thinking “oh, OK so it’s not nearly as bad as I thought it was” ... I’m not anti-fracking anymore!’ When asked how this change of perspective impacted her teaching she surmised that, had she continued teaching social studies:

It would have impacted my teaching a lot, because I would have been able to see things from the other perspective because I really did come from a very tree-hugger kind of perspective ... But because of that experience, I know that I was able to ... not be so biased in my teaching. And I think if I had continued to teach social studies, it would’ve probably lent itself to me inviting speakers [from industry] into my classroom.

For another teacher, a tour of the Alberta tar sands delivered by Inside Education had a similar impact. Asked whether her perception of the industry improved as a result of the tour she stated:

Before [the tour] I would’ve felt somewhat more negative. So, I mean it brought me up to neutral, how’s that? And thus, I was able to be very neutral with the students and have them come up with their own [opinions] ... it’s not my job to force them what I think, right?

And on the topic of incorporating industry perspectives into the classroom, the same teacher explained that she now considers a project one-sided if she can’t incorporate an industry voice:

... it’s so important to reach out and contact people, and get as much information as you can around the issue ... Just because it’s big companies that have a lot of money behind them, doesn’t mean that the information they have to share with us is any less valuable ... I try to make sure that we don’t do a project unless I have certain key people that we can connect with. There’s been projects I’ve tried to do where I haven’t been able to connect with the people I’d like to, so I basically kibosh it because I’ve only got one side of the picture.

The experiences of these teachers point to the success of the strategy pursued by corporate-funded non-profits like Inside Education and SEEDS. As the *Oilweek* article referenced above explains, insisting on balance and inserting industry perspectives as a necessary component of teaching about energy and climate issues is more effective than widespread distribution of industry ‘propaganda’ to teachers and schools. Indeed, the educators we interviewed readily adopted the principle of maintaining a diversity and balance of stakeholder perspectives in their teaching. Importantly, for many, balance could only be achieved if industry perspectives were given equal weight. One teacher, who considered himself particularly committed to ecojustice, developed an experiential learning project for his students about a major interprovincial pipeline controversy that was receiving significant media and political attention at the time. The teacher put his students in contact with an Indigenous community along the proposed route that was opposing the pipeline based on risks to the unique ecology and habitat on its traditional territories. And in order to represent ‘the other side of the discussion’, the teacher connected students to the pipeline company in order to ‘understand the industry and how it affects the economy’.

The focus on balance and providing students with both sides of the picture was especially pronounced in fossil fuel-producing communities. In these communities, educators reported fearing blow-back from parents and other educators if they were perceived to focus too much on the environment and too little on industry as the life-blood of local economies. One teacher who was involved in the outreach and implementation of the renewed environmental science curriculum remarked:

We really tried, when it came out, we met with teachers all over the province. And so we’d meet them and say look, this is what needs to be emphasized. I mean a good friend of mine is in Kindersley, which is another oil and gas [community]. And she’s like, if I talk about this, I’m gonna have some fallout! We said well, ya you are, but that doesn’t change the science of it ... there’s some pretty touchy subjects for sure.

The teachers we interviewed vigilantly policed their presentation of curricula, ensuring that their own analysis and positions were left out of the instruction and that negative environmental harms

caused by fossil fuels were balanced with positive economic and social impacts or positive steps that industry was taking to improve its environmental impact. One teacher described this fancy footwork in this way:

I'm not bashing their parents, I'm not saying that oil companies are evil and terrible for the ecosystems ... And instead of like mentioning specific companies - minus the oil spill that we talk about in a case study - we just talk more in general. But usually the kids get a little bit riled up sometimes. They're like, 'well what are we supposed to do, not use any oil?' ... [N]obody is wrong, we have all these ideas, and I like to present both sides, just let kids know, like we do need to talk about it from the environmental perspective, so it seems like we're bashing companies all the time, but I do realize that most of their parents, that's how they make their livelihood, and then I like to mention that my husband does work for an oil company as well.

The need for balance and the legitimacy accorded to industry interests and perspectives is so widespread that industry actors are understood as natural partners and stakeholders in curriculum renewal and school content. One administrator we spoke with explained that working with 'outreach organizations', including industry and non-profit partners, is one of the four main areas of his job description. In particular, he sees outreach organizations as crucial to developing resources that are specific to the local context, and therefore not available in textbooks. Indeed, the Ministry of Education has encouraged industry and non-profit partners to become involved early in the process of curriculum renewal so that they can advance resources and professional development that is well-integrated with new curricula. An educator who piloted the new grade 12 earth science curriculum reported that industry representatives attended the meetings where teachers discussed and refined the curriculum before its formal adoption. According to this educator the industry representatives were circulating resources in the hopes that teachers would incorporate lessons pertaining to their industries. A Ministry representative confirmed that outreach organizations are encouraged to be early partners in the curriculum renewal process so that their resources can be developed and refined alongside the piloting of curricula.

The educators we interviewed coupled a commitment to balance and representing all perspectives with a consistent message that it was not reasonable for societies to consider transitioning off of fossil fuels because such a transformation would threaten modern standards of living. As the following teacher explained, alternatives to fossil fuel economies can be understood as threats to life itself in oil-producing communities:

In [grade 9 science] in particular we're looking at alternative sources of energy rather than mining coal or getting oil out of the ground. Kids did projects on hybrid cars and electric cars, and ... they were all baffled as to why we don't have more alternative energy 'You know we live in an oil town, you know how many of your parents are in the oil industry'. And they all put up their hands, and then we talk about what would happen if we had more wind power, and if we didn't have to get the oil out of the ground ... [But] when we talk about pollution from the oil industry or the impact ... [t]hey want to have their truck that goes really fast that burns a lot of fuel and they don't want anyone to take that away from them.

Similarly, the following teacher described how she balanced teaching about the negative environmental impacts of the local fossil fuel economy with an explanation of why a green economy could not be embraced:

... we look at asthma rates, they are way higher than anywhere across Canada here, because of the stuff that was coming out of those stacks throughout the year ... So we're looking at the negative side-effects there, solution-wise, and then also looking at our community and how all of our, most of these kids' parents ... had one or both parents ... working in the fossil fuel industries ... So just trying to show them that ya, it'd be great for the environment if we just cut off coal plants, and cut out oil, and just went green, but that's not really an option for our community because we wouldn't be here anymore. So ... that's why we had some oil people come in and we had the mayor ... just to show both sides of that for the kids.

Hegemonic industry discourses positing the impossibility of life without fossil fuels and the legitimacy of all perspectives, logically result in lessons that focus on how continued extraction of fossil fuels can be married with environmental objectives when industry commits to reducing

its environmental impact. One educator began teaching about the environmental regulations and guidelines that fracking companies must follow after she learned about them by attending the Inside Education environmental education program described above. When asked about what she learned on the tour she commented:

It made me realize that there are some plans in place and contingencies as far as managing horizontal fracking, that they are looking at environmentally sustainable ways to do it. That you do have to follow certain guidelines and there is reporting of incidents, and you have to go through inspections and all of that.

This teacher implemented what she had learned at the Inside Education program in her classroom by assigning a problem-based learning project the next year in her grade 8 science course where she had students research the guidelines and directives that regulate fracking and the 'practices [that] are put in place to guarantee and ensure sustainability of groundwater'. Next, she connected students by skype with a representative 'from a company that's in charge of managing oil and gas and making sure that they're using environmentally sustainable approaches'.

In an environmental science course, another teacher explained to his students that 'we do need to get the oil out and it's part of our economy, but we also need to protect the environment at the same time, so we need to do it in a responsible way'. Asked how he teaches about responsible fossil fuel extraction, he replied:

We talk about at the end of the unit, how do we fix these problems? And I use a combination of you know responsibility amongst the companies that are doing stuff, and I pick some examples...as well as government regulations that I found online, like the Kyoto protocol and stuff, laws and acts that are put in to make sure companies are doing what they're supposed to be doing... The students have to realize that there is stuff being done in this country to make sure that we're protecting our environment.

As we heard in our interviews, faith in technological solutions was often key to the narrative that fossil fuel production can be consistent with environmental protection. One educator, who was involved in developing the carbon capture resource detailed above, said of the resource:

I would say the students are supposed to learn that there's a technology out there that can capture some of the CO₂ that we're excessively putting into the atmosphere, capture it and stor[e] it, retur[n] it back to the earth and stor[e] it. The resource itself isn't really focused on where this abundance of CO₂ is necessarily coming from.

Petro-pedagogy proposes a powerful narrative about the source of energy and climate problems, and, therefore, also about the potential solutions to such problems. As we have seen in the hegemonic narratives outlined so far, since life without fossil fuels is impossible, governments and industry must and are already committing to 'greening' production through responsible regulations, the introduction of new technologies, and industry best practices. And since government and industry are already doing their part, it must be individual consumers, who are demanding to use fossil fuels, that are both the cause and the solution to environmental and climate crises. Essential to hegemonic fossil fuel pedagogy is then the promotion of neoliberal student subjectivities that focus on individual actions and thereby insulate fossil fuel industries from criticism. Indeed, in our interviews we found that educators overwhelmingly ascribed the blame for environmental and climate crises to individual consumption and promoted solutions that centred on students making changes to their individual lifestyles.

The following teacher mobilised several of the hegemonic discourses covered in this section in her description of her teaching. Here she suggested that an unbalanced focus on only the environmental component of sustainable development could result in the extreme conclusion that no one should ever drive a car.

Certainly the way we talk about sustainability are those three main elements of sustainability: the social, the economic, and the environment...if you're just focusing on environmental impact, you could make a clear argument that nobody should drive a car ever. But it's only when you look into those three areas that you can really get into the complexity of it and the challenges of it. That it's not as easy as just stopping doing something.

This quotation also reflects the hegemonic discourse about individual action. Here individuals, through their private consumption, are understood as both the source and potential solution to greenhouse gas emissions. In this case, the problem is conceptualised as individuals making the anti-environmental choice to drive private vehicles. The environmental solution would then be for individuals to give up automobility, but since this would threaten modern standards of life the educator mobilises other social and economic costs and benefits in her teaching to rule out this solution. In this quotation, the teacher relies on discourses that preclude a diagnosis of the problem that would lay blame with fossil fuel producers or the wider capitalist interests that have produced built environments and landscapes that require the private use of vehicles and high levels of fossil fuel consumption. In this quotation the possibility of collective and policy solutions that would transition economies off of fossil fuels and reorient private consumption to collective consumption are foreclosed.

Even where the science of climate change and its ecological impacts are being taught in a rigorous manner, non-profit organizations encourage teachers to present their students with actions and solutions that focus on the individual. One representative of a non-profit organisation we interviewed gave a great example of how this plays out in its classroom lessons:

We have a lesson that we call Power of One. [It's an] hour and a half with a class where we're doing on the whiteboard, hey this is what's happening with climate change, this is the actual process of the greenhouse gases, and how the heat is building up ... and the reasons for it. It's interactive. And then we have a whole bunch of actions connected to that, that are based on Saskatchewan numbers ... The kids each get a card and we talk about them and say how that affects [the] picture we've created on the whiteboard about ... climate change ... [O]ne of them is: switched my whole house to LED lights, saved 22 hundred kilograms of CO2 per year, it's based on real numbers.

Echoing the non-profit focus on local environmental issues, teachers consistently profiled individual environmental actions that have little to do with greenhouse gas mitigation as appropriate responses to energy and climate crises. In one example a teacher followed up a pipeline debate with a focus on personal water use and recycling:

[W]e did this pipeline debate a little bit later, and the reaction I felt [that] I was getting from my students was ... 'woah, I never even realized that I was taking showers that were that long' or 'ya I didn't know that my family doesn't know what to recycle'.

In another example, a program delivered by Energy in Action, which focused on energy uses and extraction technologies was followed by planting trees in the schoolyard. The teacher explained the lasting impact of planting the trees in her school community:

I remember [the students] coming back [years later] saying, 'oh ya do you remember, we planted this tree,' and knowing how much it has grown, and that in turn has spurred on other classes ... [F]or example the early elementary kids, they actually plant garden boxes ... like they're saving some of their disposable[s], their garbages ... they're doing a bit of a bin ... [I]t's changing the way of thinking on a small level ... when we moved to our bigger school, the recycling program became a little bit bigger and more of an initiative throughout the whole school.

Even the teachers who are the most devoted to teaching about and mitigating climate change mobilised hegemonic discourses of individual consumption choices in their interviews. An elementary school educator whose teaching centres climate change more than any other we interviewed commented about his students:

... [T]hey get it ... [Last year] ... it was December 5th ... and we still didn't have snow ... And the kids are talking about well it's not normally 20+ degrees at the end of November, what's going on? ... However, there is still a disconnect between what they do and their choices ... So there's still lots of kids who, every Easter and February break and every Christmas break they're gone to a warm place on a plane ... [W]e talk about needing to reduce our carbon footprint. I don't say you shouldn't be taking that many trips down to Mexico every year, but I mean, they shouldn't, if we're actually gonna reduce climate change we need to stop getting on the plane so much.

Interestingly, unlike the other teachers we spoke with, this educator mixed hegemonic discourses about individual action with counter-hegemonic understandings of solutions to the climate crisis. In fact, he suggested that the province needs to develop policy that transitions fossil-fuel workers to alternative employment in order to alleviate the fears of people working in the fossil fuel economy. This teacher was the only teacher that we interviewed whose teaching confronts the corporate power of the fossil fuel industries. We attribute this to the specialised training this teacher independently sought from an international organisation that leads intensive climate change education workshops.

Conclusion

This article has sought to elucidate the discursive strategies through which fossil fuel interests reach into schools and to identify how climate and energy education is shaped by these hegemonic discourses. We identified a consistent and core set of narratives promoted and circulated by non-profit organizations engaged in energy and climate education and showed how these discourses are enacted in classrooms in Saskatchewan, a province heavily reliant on fossil fuel extraction. We name the circulation and enactment of these discourses petro-pedagogy, an integral arm of the regime of obstruction that is actively blocking a transition to a post-carbon economy. Central to petro-pedagogy is the valorisation of industry interests as a necessary component of energy and climate change education, the representation of life without fossil fuels as a threat to modern freedom, the representation of fossil fuel production as compatible with environmental sustainability through government and industry initiatives to reduce industry's impact, and the insistence that individuals are both the cause and potential solution to climate and environmental crises through their individual lifestyle choices.

Our study supports the findings of other scholars of education who have argued that environmental education has been coopted by neoliberalization. As Gruenewald and Manteaw (2007) have argued, any transformative goals of environmental education have been thwarted by the governing structures and purposes of schooling as well as many teachers' pedagogical practices. Schools are now expected to produce scientifically literate job-ready workers who will go out into the world-as-it-is and reproduce the social relations which have led to climate and environmental crises. Unfortunately, the emphases on scientific literacy and on science, technology and society (STS) have not resulted in the kind of transformative pedagogy that would challenge the corporate power of the industries that are actively blocking a transition to a post-carbon economy. While scientific literacy and STS approaches to science teaching emphasise knowledge that can be used in everyday life to inform active citizenship practices (DeBoer 2000), hegemonic definitions of energy and climate problems and their solutions work to contain this action orientation to making informed choices between different products on the market. As an avenue for future research we suggest teachers and scholars need to investigate and develop a pedagogy that can prepare students to deal with scale of the problems in front of us. We argue that this scale – economies thoroughly dependent on fossil fuels – demands more than just individual acts of conservation. Decarbonisation will require collective action capable of dislodging the power and interests of those who profit from the fossil fuel economy.

The urgent and existential crisis of climate change, most recently expressed in the IPCC's (Intergovernmental Panel on Climate Change 2018) special report, makes it clear that a rapid and drastic process of decarbonization is needed if we are going to keep global warming to 1.5°C – global greenhouse gas emissions must approach net zero by 2050. There is simply no possibility of maintaining fossil fuel extraction (even with increased efficiencies) and meeting these targets. Preparing students for this future, thus, involves the urgent need to dismantle the corporate power of the fossil fuel industries and their petro-pedagogy. Environmental education must begin to teach about the power, influence, and interests of fossil capital. It must shed the

commitment to balancing teaching about the environment with the voices and interests of industry. Environmental education must also be upfront about the impossibility of sustaining both the environment and fossil fuel production and focus on how life after oil will be different but also still possible. Finally, environmental education must build the capacity of students to act collectively, to put significant political pressure on decision-makers so that they will implement the kinds of policies and regulations that match the challenge ahead of us. In other words, environmental education must begin building a counter-hegemony that would produce citizens capable of understanding and fighting for a different world.

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