

Climate Change: Imagining, Negotiating, and Co-Creating Future(S) with Children and Youth

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Abstract With an understanding that children and young people will be severely affected by climate change consequences, this paper asks, what role should they have in their education or in civil decisions that will impact their quality of life in a climate-altered world? The paper argues that too often educational responses to uncertainty result in instrumental approaches where children and youth are not given agency to be active participants in their educational choices. Educational responses that emphasize participatory, place-based and transformative or emancipatory approaches to learning are likely to be more generative and responsive to young people's needs. Using Kagwa and Selby's (2010) framing that climate change offers a "learning moment [that] can be seized to think about what really and profoundly matters, to collectively envision better futures, and then to become practical visionaries in realizing the future" (p.5), the paper suggests two educational shifts that will help formal education systems become responsive to the needs of the twenty-first century. The first shift, adopting community as curriculum, focuses on knowledge production becoming a participatory process that is practiced with and amongst community members trying to solve local problems. The second shift, adopting a connected learning approach, focuses on harnessing the advances of innovations of the digital age with an equity agenda to address local issues. The paper outlines case examples which highlight how these shifts create pathways for what environmental

sustainability education calls for in order to foster creative engagement in emergent change, facilitated by new approaches to learning and ways of organizing.

Keywords Climate change · Education · Young people · Futures

Climate Change & Young People

There is mounting evidence that, unless record levels of CO₂ are curbed by 2050, life on the planet will be much more challenging due to major climatic changes (International Panel on Climate Change [IPCC] 2014). It will be children and youth who are most at risk of high temperatures, malnutrition and climate-induced migration: "The greatest challenge for our children and their children will be feeding the 9 billion people projected for the middle of the twenty-first century in a world ravaged by hotter temperatures, more extreme weather and sea level rise" (UNICEF 2014, p.5). It is also estimated that children bear 90% of the disease burden from anthropogenic gases and altered climate (Farrant et al. 2012). This raises the question: for children born today who will most likely bear the impacts of climate change before they can vote or enter the work force, what spaces in policy-making and learning contexts are offered to them to imagine, negotiate, or co-create their future(s)?

According to the United Nations Convention on the Rights of the Child [UNCRC], children have a right to survival, to develop to the fullest, to be protected from harmful influences, abuse, and exploitation, and to participate fully in family, cultural, and social life (1989). The Convention protects children's rights by outlining standards in healthcare, education, legal, civil and social services. Article 12 of the UNCRC also empowers children and young people to be actively involved in decisions that affect them and to have their opinions taken

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into account by adults. Article 12 implies that children can negotiate with adults and carers to determine the quality and nature of the services and infrastructure that is provided to them (Committee on the Rights of the Child 2009). Positioning children and youth as active participants and decision-makers in creating, designing, and shaping the future challenges many traditional conceptions of their ability. Within policy and education their subject position can be polarized: “Young people...are typically positioned as both dependent, vulnerable receivers of care and education, and sometimes ‘agentic’ subjects with distinct ‘voices’” (Komulainen 2007, p. 13). If, however, children and young people will be severely affected by climate change consequences, what role should they have in their education or in civil decisions that will impact their quality of living in a climate-altered world?

In the face of unpredictable and uncertain futures, educational policy can seem to take on instrumental approaches to education, wherein specific goals/outcomes/outputs are decided as preferred behavior and educational interventions designed for a specific group, often positioned as passive receivers (Wals et al. 2008). To give an example, the United Nations Decade for Education for Sustainable Development, (UNDESD), was defined by UNESCO (2005) through inherent instrumentalism:

The overall goal is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. This educational effort will encourage changes in behavior that will create environmental integrity, economic viability, and a just society for present and future generations.

In this definition, the agency of the citizens to imagine, design, shape, or create the future is missing. The educational intervention focuses on behavioral change. A similar instrumentalism between young people’s education and the future, even national survival of the American economy, is articulated in Barack Obama’s 2012 State of the Union where he discusses formal education Gaddi (2012, p.149):

At this defining moment in our history, America faces few more urgent challenges than preparing our children to compete in the global economy. The decisions our leaders make about education in the coming years will shape our future for generations to come. It will help determine not only whether our children have the chance to fulfill their God-given potential or whether our workers have a chance to build a better life for their families, but whether we as a nation will remain in the 21st century the kind of global economic leader that we were in the 20th century.

The agency of children and young people to be active participants in their educational choices (beyond competing in the global economy) is absent. It seems that adults have already defined the goals and the rules that have predetermined young people’s future(s). In both the above examples, there is an underlying assumption that if the educational approach is imbued to foster specific capacities important to the present, when the students of today transition into society as adults tomorrow, they will be prepared. Is it out of desperation that this rhetoric subjects children and young people to a “form of chronological imperialism” (Facer 2012) and robs them of their rights today to shape their future(s)?

The impacts of climate change will radically transform the ways in which young people in different parts of the world negotiate their futures. While environmental impacts will be global, some populations and geographies will be more severely affected than others. There are 130 countries that have their largest urban populations in low elevation coastal zones vulnerable to sea-level rise, stronger storms and coastal hazards induced by climate change (McGranahan et al. 2007). The environmental and social challenges will drive social injustices and conflicts related to food production and distribution, energy, pollution, and resources (White and Wyn 2013). The marginalized – including children - will bear the brunt of these injustices (Lever-Tracy 2011). Plotting a linear trajectory from today to a projected or knowable future may bring some reassurance, but it is dangerously misleading and stems from an over confidence in predictive capability and modeling (Foster 2011).

Educational Spaces within the Climate Change Moment

Public policy tends to instrumentalise education in hopes of ameliorating matters such as climate change. At COP15, Education for Sustainable Development was championed as the educational response to climate change (Læssøe et al. 2009). Because it is difficult to predict the full impacts of climate change, an educational response also requires approaches that are responsive, process-driven, and acknowledge uncertainty and unpredictability. The “journey model” of our progress into the future (that is, ‘getting to there from here’) “fundamentally misrepresents our creative engagements in emergent change” (Foster 2011, p.384). Educational responses that emphasize participatory, place-based and transformative or emancipatory approaches to learning are likely to be more generative and responsive to young people’s needs. Kagawa and Selby (2010, p.5) argue that climate change offers a unique emerging moment: “Rather than shying away from looming climate change, the learning moment can be seized to think about what really and profoundly matters, to collectively envision a better future,

and then to become practical visionaries in realizing the future.”

From a transformative approach, wicked problems, such as accelerated global environmental change, require forms of education and governance that afford new spaces for collaborative and social learning. At times these spaces will need to be “disruptive” to break away from systemic dysfunction and vested powers and interests that are not operating for the wellbeing of people or the planet (Stevenson et al. 2017). Creative engagements in emergent change education mean designing spaces for learning that allows for boundary crossing. Multiple perspectives, interests, and values can be combined and considered in creating authentic and relevant projects, artifacts, and processes to address local issues. For children and youth this means that *their* perspectives and input about local issues related to climate change is not only considered in civil governance but that their ideas, designs, and solutions are brought forward, trialed, and modified as part of their learning experiences. It is this active engagement in local community, as in their school curriculum, that allows children and youth to imagine and co-create preferred futures.

Within the Australian Curriculum (version 8.2), there are spaces for children and young people to learn about climate change, and to take active roles within their schools. Most educators will point to the Sustainability Cross-curriculum priority, which has been designed around the concepts of systems, worldviews, and futures. Children and youth, however, are also invited to engage purposefully in imagining and creating futures within the new Australian Curriculum: Technologies. The curriculum was conceptualized to foster the skills, understanding, creativity, experience, and ethics to design and create for preferred futures over probable ones (see Walsh and Whitehouse this issue). In both the Design and Technologies and Digital Technologies subjects, there is a

focus on providing opportunities for students to consider how solutions created today may be used in the future through applying systems thinking along with critical and creative thinking. It is intended that students will also engage in design thinking to address local challenges and issues. Individuals will have different views about the priority of the benefits, that the risks will vary, and that preferred futures are subject to contestation (Fig. 1).

Technological innovation is one of the most exciting and relevant opportunities for young people to learn and engage in projects that are focused on engineering principles, electricity generation, food and fiber production, transportation, and materials. Some argue that it is today’s school children and their ability to utilize tools for stabilizing our climate through new technologies that will turn upside down the current economic structure and introduce a new and diverse global economy (Flannery 2007). This educational approach, however, is only possible when teachers have the understanding, skills, and experience to design and promote suitable learning contexts. Students who have authentic opportunities to engage in ideation, design, project management, creative problem-solving, assessment and managing risk, evaluating processes, and collaborating with others, are less likely to be the ‘victims’ of great change. This is a tall order when the majority of teachers did not experience learning environments in their own schooling, or most likely in tertiary education environments, that align with this design and process-oriented approach.

Two Educational Shifts

In today’s always-online environment, learning is no longer bound to educational institutions. Young people go to online spaces to learn about the issues and challenges they are facing in their lives (Ito et al. 2010). In my doctoral research that focused on studying 11 young people’s usage of social media for learning about and taking action on local environmental issues, the majority said that climate change is their number one concern (Field 2017). This research found that several youth indicated that they did not feel supported by their teachers to engage in environmental sustainability issues that were affecting their communities and it is these youth who created Facebook interest groups to connect with like-minded others (Field 2017).

If, as educators, we are to provide educational learning spaces that encourage young people to address issues in their local communities in meaningful and relevant ways, then we need to encourage them to use all the information, tools, and resources they have at their fingertips. It is through action that hopeful futures are created. As David Orr said: “Hope is a verb with its sleeves rolled up”. I believe education can foster the capacities of young people to imagine, negotiate, and co-create their futures, by adopting two broad shifts: 1) *adopting community as curriculum into schools* (Cormier 2010; Facer

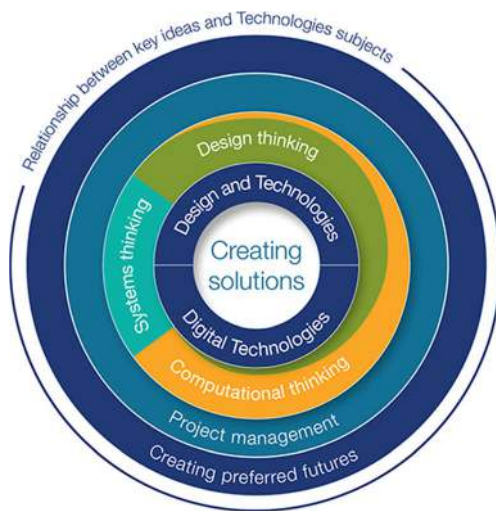


Fig. 1 Relationship between key ideas and Technologies subjects. ACARA 2016

2011); and 2) *adopting connected learning approaches* (Ito et al. 2013). These recommended shifts are interrelated and in some schools they are already being practiced (see Ito et al. 2013 for several case studies). From my observations, however, these schools are exceptions rather than the norm.

Adopting Community as Curriculum

The first shift, *adopting community as curriculum into schools*, focuses on knowledge production becoming a participatory process that is practiced with community members trying to solve problems (Cormier 2010). Schools shift to become public spaces central to the community. The school focuses on partnerships with community businesses, local councils, and organizations to address pressing challenges and explore possible alternative futures for students in their communities (Facer 2011). Strategic plans are created out of community discussions to map and prioritize actions to address current challenges and align decisions towards future directions. This shift requires schools develop new governance structures that focus on community issues, processes, and development and these would include children's and youth's participation. Facer (2011, p.105) argues that this shift within schools would foster the conditions for "slow citizenship that allow dialog across difference and that build relationships across generations, the future building school sets up new governance arrangements that allow communities to participate in a sustained conversation about the relationship between education and community".

The idea of a school as the central heart of the community is not a new idea. Henry Morris (n.d., para 3) proposed the concept of the village college in the 1920's for rural communities in England. He wrote the village college:

[W]ould take all the various vital but isolated activities in village life – the School, the Village Hall and Reading Room, the Evening Classes, the Agricultural Educational Courses, the Women's Institute, the British Legion, Boy Scouts and Girl Guides, the recreation ground, the branch of the County Rural Library, the Athletic and Recreation Clubs – and bringing them together into relation to create a new institution for the English countryside. It would create out of discrete elements an organic whole; the vitality of the constituent elements would be preserved, and not destroyed, but the unity they would form would be a new thing.

The difference between the Morris articulation of the village college and *community as curriculum* in schools as the reason for bringing together community groups is to foster deliberate communication, planning, and actions that address current environmental, social, and economic challenges within the

community. In a possible future trajectory of this idea, the local council and the public school might share the same physical space (Facer 2011). In some areas, school boards and schools have positioned themselves in the heart of the community. The school's facilities are used by various community groups, which result in many positive social benefits but may not mean that the school is the centre of community discussions about current challenges or preferred futures.

This shift requires that schools, and their communities, are given some authority to create spaces for local and relevant learning opportunities. In many countries this means a negotiation from the responsibility of curriculum design being nationally coordinated to also include some local responsibility and autonomy. This shift would require meaningful assessment and evaluation that is not solely based on comparative test scores across regions, states, and countries. With improvements in learning analytics and the ability to share artifacts that arise from knowledge production processes (documents, video, photo, audio, websites), assessment and evaluation can focus on observation and feedback more readily than high skills testing (Facer 2011). This would move towards an alignment between schools and environmental education that have traditionally had contradictions in purpose and practice (Stevenson 1987) by providing ways addressing environmental and social injustices through democratic processes, and a focus on collective responsibility, rather than individual practices.

One example is the Lowline Project on the Lower East Side of Manhattan (the world's first underground park) where primary students from a nearby school review the history of the area including social groups. This includes both face-to-face and online research. The students go through a series of workshops to imagine and discuss their design ideas for how the park can be used, taking into account social considerations. The students then present their vision of what they would like to see in the park to their teachers, parents, and other community groups involved in the development of the park and create a 3-D scale model to represent their vision (see Lower East Side History Project for more information).

Adopting a Connected Learning Approach

Connected learning is an educational approach that considers interest-driven learning, changing social, economic, technological and cultural contexts, and affordances of the digital age (Ito et al. 2013, p.8). This approach harnesses the advances of innovations of the digital age with an equity agenda for youth who otherwise lack access to opportunity:

It is not simply a 'technique' for improving individual educational outcomes, but rather seeks to build communities and collective capacities for learning and opportunity. Without this focus on equity and collective

outcomes, any educational approach or technical capacity risks becoming yet another way to reinforce the advantage that privileged individuals already have (Ito et al. 2013).

When adopting a *connected learning approach* the boundaries between learning that occurs in school and outside of school become blurred as educators working within the formal education system encourage children and youth to focus their learning on their interests and the issues that are in their communities (Cantrill et al. 2014). This is a networked approach to educational reform, and is different from previous attempts at technological deployment or centralized institutional reform. Shifts occur across different sites of learning where like-minded reform efforts align across sectors and can achieve “network effects” (Liebowitz and Margolis 1994). Digital technologies afford unique opportunities for networks to develop and can complement institutionally driven change. Young people are enabled to pursue a personal interest with the support of friends and adult mentors. They connect interest-driven learning to academic requirements, career pathways, and civic engagement.

There are numerous examples of ‘connected learning’. One example, to illustrate this approach, is 17-year-old Sagar Aryal. He lives in Katmandu Nepal and is the founder and president of a child and youth run organization, called Sano sansar, that runs programs and campaigns focused on social justice and environmental issues, predominantly in Nepal. After Sagar noticed how many children did not go to school in Katmandu, he convinced his grade 5 classmates to help him

start a lending library and reader club for the children who could not go to school. Several years later, Sagar decided to continue his community-based work and discussed with his friends about organizing some environmental projects. The group began to do projects and, to harness momentum, Sagar wanted to create a website for the growing organization. He drew on his computer skills learned from helping his dad make presentations for his business and taught himself Photoshop. Through befriending some adult programmers online, Sagar learned to code and he built the Sano sansar Initiative website (<https://www.sanosansar.org>) and also created a Sano sansar Initiative Facebook page. With the help of Sano sansar’s online presence, coupled with on the ground workshops and activities (such as discussion forums on governance issues, leadership training, tree planting, disaster relief efforts, environmental films, environmental writing competitions, and others), the Sano sansar network grew to 5000 children and youth members. Here is a data visualization of communication that has occurred on the Sano sansar Initiative Facebook group (Fig. 2).

The figure was created using social network analysis and shows the centrality of Facebook posts, comments, and number of tags of page contributors. The size of the nodes indicates centrality to the network. The color was selected using Gephi’s color palette.

In an interview, Sagar explained to me (Interview, 3 December 2013) that through online interactions, he has met many like-minded young people who have now joined this network:

Most of the people I know today... we met online before we met. The online platform, it is helping people to know people with similar ideas, because if I’m interested in debating or I’m interested in working for the environment sector, and I can find some people who are linked with people like me, so we can have an online discussion. We can have some sharing and later on it’s like, let’s meet.

Sagar also conveyed that he has not felt that teachers supported his learning around his organization and that he did not see any ways that he could align the work he has done with Sano sansar with his formal schooling. When I asked him, “have you had any teachers that supported your learning around your organization? If yes, how did they support you?”, Sagar replied:

No. I would say no to this question. I was looking for an education that could really make a difference in my life. I changed schools several times because I was looking for a school that would be exciting or something that would make my education better. So I would say no (interview, August 23, 2013).

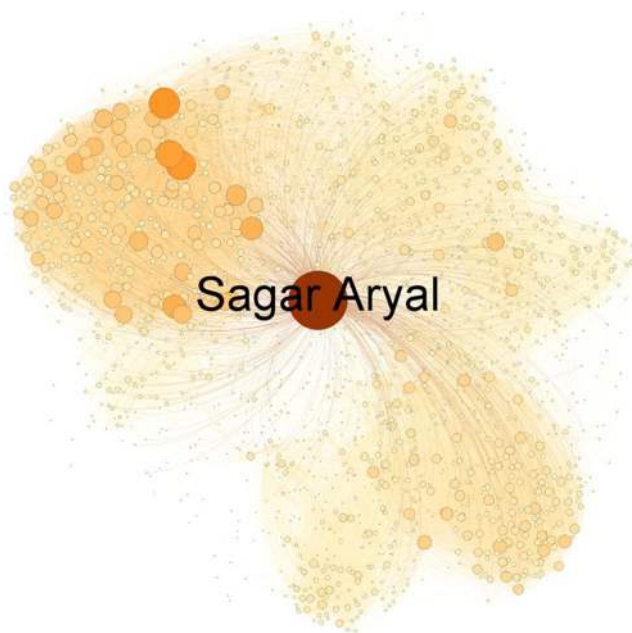


Fig. 2 Sano sansar network communication visualization. From Field, E. (In press)

These suggested shifts can better create educational institutions that are adaptive and responsive to the challenges and needs of local communities within the twenty-first century where information is abundant, and environmental, social, and economic systems are in flux. These shifts provide pathways for what environmental sustainability education calls for, i.e., creative engagement in emergent change facilitated by new approaches of learning and ways of organizing learning, that will contribute to transforming presently unsustainable systems. Formal education systems can play incredibly important roles in adapting to and transitioning towards unknown futures, and encouraging children and young people to imagine, negotiate, and co-create futures (Facer 2011, p.103):

Rather than working to simply service this impoverished future narrative, we need education institutions that can help us to work out what intelligence and wisdom mean in an age of digital and cognitive augmentation. We need education institutions that can teach us how to create, draw upon and steward collective knowledge resources. We need educational institutions that can build intergenerational solidarity in a time of unsettled relationships between generations. We need educational institutions that are capable of nurturing the capacity for democracy and debate that will allow us to ensure that social and political justice are at the heart of the socio-technical futures we are building.

If we, as adults and educators, fail to provide these avenues, will we be forced into change by children and youth directly, advocating for the protection of their futures and future generations' futures?

In a landmark law suit, twenty-one youth from across the United States between the ages of 8 to 19, filed a constitutional climate change lawsuit against the federal government, claiming that “the federal government has known for decades that carbon dioxide pollution was causing catastrophic climate change and that massive emission reductions and a nation-wide transition away from fossil fuels was needed to protect plaintiffs’ constitutional rights” and “in spite of knowing of the severe dangers posed by carbon pollution, defendants created and enhanced the dangers through fossil fuel extraction, production, consumption, transportation, and exportation” (Juliana et al. v the United States of America 2016). The lawsuit was filed in September, 2015 and the decision of US District Court Judge is pending in mid-November, 2016. If the United States of America is found guilty, this will set an important precedent in climate litigation for future generations.

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