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"We can keep the fire burning": building action competence through environmental justice education in Uganda and Germany

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ABSTRACT

The global dimensions of climate change necessitate a response that takes national differences – social, economic, geographic, and cultural – into account. Action-oriented education has a key role to play in advancing citizen engagement in a culture of sustainability. This paper describes research conducted with one such education programme, Youth Leading Environmental Change (YLEC), which operates in six countries and engages university-aged youth in discussion and practice related to global sustainability, systems thinking, and environmental justice. YLEC aims to advance four key competencies; this paper focuses on the goal of action competence, which involves acquiring knowledge, reflecting on experience in the context of one's values, envisioning alternative futures, and acting individually and collectively to advance those alternatives. The present article examines the impacts of YLEC on environmental action competence in two of the countries involved in this research: Uganda and Germany. In-depth interviews were conducted with participants in both countries to examine the development of action competence during and after the programme. Findings suggest that outcomes differed in each country, reflective of participants' different lived experiences. YLEC effectively built on the conditions faced in each country to accompany youth to a higher level of awareness and action. These findings have implications for environmental education programmes striving to work with multiple nations and diverse participants.

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No longer widely contested, climate change is recognised as having significant impacts on the globe and its inhabitants (International Panel on Climate Change [IPCC] 2014). These impacts and their long-term consequences have dramatic implications for young people whose economic, social, and political lives are increasingly circumscribed by issues of climate. As such, youth have an important role to play in identifying and reifying a vision of the future that maximises human and environmental well-being within the constraints of a new climatic reality (Riemer, Lynes, and Hickman 2013). Adopting such a role requires preparation, however. Equipping young people to be capable environmental actors, now and in the future, is a key goal of the Youth Leading Environmental Change (YLEC) programme (Riemer and Dittmer 2016).

YLEC is a multi-national education programme that engages university students in learning and action related to environmental issues, particularly environmental justice. Beginning in 2011, YLEC

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used a collaborative process (see Hickman and Riemer 2016) involving partners from six countries (i.e. Bangladesh, Canada, Germany, India, Uganda, and the U.S.A.) to design the pedagogical approach and content of a 11-unit workshop series. With the support of a central coordination team based in Canada, the programme was adapted as needed to fit the cultural context of each country, while maintaining fidelity to the overall theory of engagement. These key ingredients of this theory included an emphasis on system thinking, exposure to personal accounts of lived environmental injustice, experience with the design and implementation of an action project, ongoing journaling, and a video exchange with an YLEC group from a different country (i.e. Canada with Uganda, Germany with India, and Bangladesh with the U.S.A.). These components, within a pedagogical approach of peer-based learning and critical consciousness raising, were expected to contribute to participants' comprehension, motivation, skills, self-efficacy, and access to opportunities for further involvement in environmental action (for the full theory of engagement, see Hickman and Riemer 2016).

From its inception, the YLEC programme was coupled with a mixed-method research project that aims to document and evaluate YLEC's development and implementation. Several other articles have been published to describe YLEC's theory of engagement (see Hickman and Riemer 2016), its impacts on participants across all six countries (see Riemer *et al.* 2016), and specific elements of its theory of engagement (e.g. Sayal *et al.* 2016). Our goal for the present article is to explore in detail the impact of the YLEC programme on a specific element of the theory and the mechanisms and processes by which the programme created those impacts. This article highlights the element of action competence, examining the cases of Uganda and Germany.

Site selection: Uganda and Germany

The six countries involved in YLEC were selected purposefully to roughly represent two types of experience with climate change, the first being economically developing countries that face many direct impacts of climate change (i.e. Bangladesh, India, and Uganda), and the second being economically "developed" countries that significantly contribute to climate change without facing many direct impacts (i.e. Canada, Germany, and the U.S.A.). The differences between and within these groups provided pedagogical opportunities to expose participants to the different conditions faced by youth around the world, and research opportunities to compare the impacts of YLEC in different contexts.

On the topic of action competence, we found the data in Germany and Uganda to be particularly rich, while also providing an opportunity to compare significantly different social, political, and physical contexts. These two countries differ greatly in their established levels of environmental engagement in political and social spheres. Because of contextual variations, the YLEC components impacted participants' action competence in different ways, depending on the site. This illustrates a larger pattern across all six partner countries given their differences, and provides helpful lessons for other multi-national environmental education programmes. These two countries are highlighted for the purposes of this paper, therefore, to demonstrate the influence of context on the delivery and outcomes of YLEC. We emphasise, however, that these two countries, although different in their patterns of environmental consciousness and action, each reveals a youth population motivated to create positive environmental change but limited by insufficient opportunity.

Germany: opportunities to move from intention to action

Germany stands out globally due to its long history of successfully engaging broad support for environmentally motivated changes and policies. The German Green Party began as a collective of grassroots movements inspired by the 1979 oil crisis and the resulting boom in nuclear power. These movements eventually joined forces, gaining momentum and seats in national as well as European parliaments by the 1980s. In 2011, after the Fukushima catastrophe led to massive student and

general protests, the governing conservative party shut down all nuclear power plants and the term *Energiewende* (the broad national shift towards renewable energy) was introduced. This sent a clear message about the support for such environmental policies among the German population (Schweizer-Ries, Rau, and Hildebrand 2014).

The level of civic and political youth engagement has gone through waves over the last several decades. Youth and young adults played a critical role in the students' movement of the 1970s and the environmental movement mentioned above, and although their political engagement dipped after the 1980s, this has been followed by a resurgence in political interest and activity in the last decade (Albert, Hurrelmann, Quenzel, and Schneekloth 2011). Greenpeace (2012) found that 77.5% of the 1070 German youth questioned (age 18–24) reported some degree of motivation and intention to take active steps towards sustainability (Grunenberg, Küster, and Rode 2012). This willingness to become involved has increased steadily over the last few decades, moving towards political engagement. A study published in 2011 (Borgstedt, Calmbach, Christ, and Reusswig 2011) found that German youth aged 18–29 have high expectations of environmental politics. However, the authors also identified deficits in youths' personal practices relative to the general population, especially regarding transportation and consumption. They conclude that there is a need for new ways of engaging German youth, including different approaches for mobilisation in varying social milieus. In examining volunteer opportunities for youth (aged 14–19), Lehrke (2007) also found shortcomings in terms of opportunities for active involvement. It is important to identify better ways of engaging youth in Germany that help them move from intention to action.

Uganda: opportunities to enhance environmental and economic well-being

Uganda has a high level of biological diversity and atmospheric resources, which significantly supports the country's ecological well-being (NEMA 2008). Uganda's vulnerability to the effects of climate change is particularly high, however, because of its dependence on rain-fed agriculture. Environmental resources constitute the primary livelihood source for more than two-thirds of Ugandans (77% of total employment) in the form of subsistence agriculture (Mugagga *et al.* 2010). Thus, the public and private sectors are ill-prepared to respond to climatic changes and the government is struggling to legislate and implement effective adaptation measures while balancing economic concerns (IPCC 2001, Hepworth and Goulden 2008, UNEP 2009).

Forty-five per cent of Uganda's population is younger than 15 and 78% are under 30 (CIA 2012). Youth and children feel the impacts of climate change on Uganda's natural and human environments keenly because of their families' reliance on local resources for subsistence (Chawla 2002, IPCC 2007). Not only are their daily lives affected, but also their opportunities and prospects for the future are made hazy because the typical agrarian lifestyle trajectory has become a less viable option. Because of this, we agree with Johnson and colleagues (2013) that the importance of cultivating the capacities of children and youth to take on environmental leadership and civic responsibility cannot be overstated. Lack of interest in this area does not appear to be the barrier; when opportunities are available, East African youth "are capable and willing to act as 'young citizens' imparting valuable information to communities and acting as change agents in the areas of preventative health, community safety, and environmental conservation" (Johnson *et al.* 2013, p. 31; see also Johnson-Pynn and Johnson 2005, 2010, Morse 2008). The key, then, is to fill this gap by creating spaces for engagement (IYF 2011).

To date, environmental engagement in Uganda has mostly been associated with education programmes in primary and secondary schools. These programmes tend to be agro-forestry related, such as establishing tree nurseries, which provide fruit for sustenance, fibres for manufacturing, and firewood and charcoal for cooking. These projects enjoy widespread community support because they meet the immediate needs of people for food and provide revenue that can be reinvested. Opportunities for civic or political engagement in later years of life are few, however. In April 2007, Uganda had its first major public environmental demonstration to protest the government's plans to give

away a section of Mabira National Forest Reserve for sugarcane production (UNEP 2009). There have since been demonstrations against land grabbing, the Buganda land question protests of 2007 concerning proposed amendments to the Land act of 1998, and more recently the ongoing Black Monday campaign against national corruption. These have been led mainly by civil-society organisations with support from youth and women's groups. In general, youth are advocating for increased political space and freedoms, and the government's provision of basic services such as education and employment for youth. These trends show the importance of paying due attention to social and economic issues in tandem with environmental concerns in Uganda.

Action competence

As mentioned, this paper focuses its analysis on the impacts of YLEC on participants' action competence. Overall, action competence is aimed at making "present and future citizens capable of acting on a societal as well as a personal level" (Jensen and Schnack 1997, p. 164). Personal-level behaviour alone is insufficient to address anthropogenic environmental degradation and climate change (e.g. Jensen and Schnack 1997, Dittmer and Riemer 2013, Bragg 2014, Rouser-Renouf *et al*. 2014, Alisat and Riemer 2015, Dimick 2015). Many environmental education efforts prioritise raising awareness, with the assumption that behaviour change will follow and, furthermore, will result in impact on climate change issues (Alisat and Riemer 2015). Uzzell (1999) describes acquiring learning as only one plane of environmental education and argues that few programmes reach the second plane – developing concern – and that almost never is the third plane of finding solutions even attempted. In his view, this results in many environmental education programme outcomes falling far from the mark of action competence. Although in the years since he made that argument many environmental education programmes have begun to address that issue, we believe that it is an important reminder to be self-critical and reflexive as to the ability of any programme to equip students with action competence.

As such, although awareness raising is an important ingredient, YLEC is premised on the conviction that environmental education has the potential to go beyond imparting knowledge to engage young people in analysis and action that reaches beyond their personal lives. Civic engagement (Pancer 2015) and collective action (Lubell 2002) are the focus outcomes of our theory of change and are built on comprehension, motivation, skills, self-efficacy, and opportunity (see Hickman and Riemer 2016). Action based on civic values and collectivity has much greater potential to significantly impact climate change issues and contribute to a culture of sustainability. The central use of environmental justice themes in YLEC further directs participants' thinking and action away from self, orienting them towards a concern for the most pressing climate issues affecting others' lives, near and far.

For the purposes of this research, we used the construct of action competence to examine capacity for action beyond the personal level. Jensen and Schnack (1997) suggest four constitutive components of action competence: knowledge/insight (what are the challenges, what are the contributing causes, and what are potential solutions), commitment (motivation, drive, and assertiveness), visions (of alternative ways of being that could emerge in the future), and action experiences (having taken some action already, generally in education settings). They also mention other components of action competence proposed in the literature, including insight, skills, courage, and trust in one's power to influence. Although helpful, these authors' description of this construct does not differentiate between action competence itself and its potential antecedents and consequences (e.g. action experiences). Likewise, the authors do not provide sufficient rationale for the inclusion of their four components and the exclusion of the other components mentioned. Confusion has also emerged regarding the definition of action competence. Barrett (2006) suggests that action competence be framed as "a particular kind of knowledge – knowledge about visions, causes, effects, and possible responses to environmental problems" (p. 507). Bishop and Scott (1998), in contrast, emphasise the action orientation of this concept when they define it as "a set of capabilities which equip people with the ability to take purposive and focused action,

and which embodies a democratic commitment to be participants in the continuing shaping of society" (p. 225).

Although this lack of consensus on a definition of action competence muddies this construct's usefulness, the YLEC collaborators agreed during the planning stages that a conception of the participants' capacity for action was a vital guiding element for the programme's design, implementation, and study. Therefore, we have used a slightly adapted version of Jensen and Schnack's (1997) theory, operationally defining action competence as the ability to arrive at solutions for individual and societal problems through critical analysis of the root causes of environmental issues. We identified four elements of this ability: knowledge about environmental issues, reflection on knowledge and experience within the context of one's values, visions for alternatives, and the ability to engage in collective action. We see a need in the existing literature for stronger empirical evidence of how programmes can develop action competence; our intention is to provide sufficient contextual and programmatic detail to point to ways by which the YLEC experience contributed to this development in its participants.

Methods

The multi-national YLEC study used a comprehensive longitudinal mixed-method comparison group design that included a variety of data from different sources (see Riemer *et al*. 2016). In this paper, we focus on the qualitative data collected from interviews conducted with participants approximately three months after the conclusion of the programme. The same interview guide was used in both Germany and Uganda, although adjustments were naturally made to suit the particulars of each setting. The interview guide sought to trace the movement of the participants from before, throughout, and following YLEC. Questions and probes highlighted cognitive, emotional, and behavioural experiences and changes in relation to key YLEC components.

Germany

In Germany, YLEC participants were primarily students of cultural science and were recruited through the Sustainability Science certificate programme, within which the YLEC programme was offered. Six of the eight YLEC students agreed to participate in an interview. Participants ranged in age from 18 to 33 (M = 23.8) and two of the six were women. All of them reported that they were interested in environmental issues, many from a very early age, and had been exposed to environmental conservation issues throughout their lives.

The interviews with the YLEC-Germany participants were conducted either in English or in German by a research assistant (the third author), who was part of the YLEC-Germany team. Each interview was 30–60 minutes long. The interviews were transcribed and translated into English as needed by the German research assistant, who is a native English speaker. The qualitative analysis software NVivo was used to identify specific codes and themes. The German research team utilised the codebook that was developed by the Canadian coordination team but also applied an additional inductive analysis process, which included the categorisation and coding of the transcribed material.

Uganda

In Uganda, the university partner (second author) recruited participants by announcing the YLEC opportunity in his courses and following up with those interested. Twenty-four of the 36 YLEC students agreed to participate in a one-hour interview. These participants ranged in age from 21 to 25 (M = 22.8) and 40% were women. Twenty-one participants were enrolled in an environment-related programme (environmental science, environmental management, or urban planning) and seven described pre-YLEC environmental engagement at any level of action (personal, interpersonal,

organisation-based, or civic). The first author travelled to Uganda from Canada to conduct these interviews over the course of eight days.

Interview data were analysed through consensus coding conducted by the Canadian coordination team. Initial margin coding was translated into a codebook over three full-day meetings. This codebook was then used to code a selection of transcripts, which were reviewed for consensus once more before being applied to the remaining transcripts. Coding was conducted using NVivo 10. The Ugandan YLEC team reviewed and confirmed the resulting themes and conclusions.

YLEC implementation

The YLEC programme contains 11 three-hour interactive pedagogical units that, together, implement the core components of the theory of engagement. Descriptions of the units and their main functions together with suggestions for implementation were provided in the form of a manual (Hickman, Riemer, and Sayal 2012) and two facilitator training sessions. The YLEC programme was designed to be sufficiently flexible as to adapt to different country contexts, while staying true to an underlying structure and theory of engagement that allowed comparison among countries. To contrast findings from Germany and Uganda, therefore, it is important to establish how the programme was delivered in each context. Table 1 provides an overview of several YLEC programme components and a brief description of each country's implementation.

Several YLEC components are theorised to contribute to action competence. The most obvious contributor is the action project, which exposes participants to new knowledge, asks them to

Table 1. Overview of major YLEC components as implemented in Germany and Uganda.

YLEC Component	Germany	Uganda
Implementation format	Integrated into the curriculum of a Sustainability Science certification programme	Stand-alone programme that provided a YLEC completion certificate from Canada
Environmental justice speaker	In lieu of a speaker, which was difficult to find, a series of short videos about the impacts of climate change on Germany were shown.	An activist who presented local examples of injustice and described entry points for action and ways to stay safe as an activist
International exchange	Two video exchanges were conducted with YLEC-India, guided by the youth facilitators in both countries. Buddies could connect by email as well but challenges arose from the larger number of participants in YLEC-India.	Technology barriers on both sides impeded the video exchange with YLEC-Canada. Students were assigned buddies and communicated via email, which was impeded by technology issues.
Action project	Participants conducted a needs assessment at the university and decided to setup an online platform for coordinating carpooling. They partnered with the university administration, the community partner, and a local printing shop to create flyers, stickers, and a banner to post on campus. Some students continued this work after YLEC.	Participants learned to make "rocket stoves" from easily accessible materials. These use a 7th of the fuel (wood) of regular 3-stone stoves, as well as reducing human exposure to harmful wood smoke. Although the project was limited to learning how to construct the stoves, several participants took initiative to build stoves for families in their own villages and/or in surrounding villages.
Role of faculty partner	Involved in programme planning and participant recruitment. Visited the group for at least two sessions.	Involved in programme planning and participant recruitment. Visited the group for at least two sessions. Supported students' action projects after the end of the programme.
Role of youth facilitators	The two facilitators planned and conducted all sessions, with one of them taking the lead.	The two facilitators planned and conducted all sessions, with one of them (the fifth author) taking the lead. They used informal lines of communication (e.g. texting) during and after the programme to inform participants of opportunities for environmental action.
Role of community partner	The head of a local conservation NGO was both a peer facilitator and the community partner. Provided financial support for the action project.	Involved from the beginning of YLEC-Uganda. Guest speaker on engaging community members in action. Provided action project site and training.

envision potential alternatives, and builds skills for action. In the German case, this focused on the topic of university students' transportation habits and the environmental harm inflicted by poor transportation practices. The YLEC participants decided to address this issue with the creation of an online portal for arranging carpooling among university students. This involved skill building in administering such an online space, as well as in social marketing to raise public awareness of the tool and its importance. In the Ugandan case, the action project focused on the topic of cook-stove fuel inefficiency and the resulting problem of deforestation. The Ugandan community partner, the Joint Energy and Environmental Projects (JEEP), conducted a half-day training session with the YLEC students, educating them about the environmental and health problems of traditional three-stone stoves and training them to build a more efficient "rocket stove" out of easily accessible materials. In addition, the community partner attended a YLEC session to discuss the importance of engaging local residents in community-based change and how to go about this in a respectful, effective, and empowering manner.

Reflection on knowledge and experience within the context of one's values is another element of action competence. Participants were asked to consider and elaborate their environmental values framework, particularly through YLEC's emphasis on environmental justice. Although a live account was preferred, in Germany the environmental justice component took the form of a series of videos about the impacts of climate change on the country, due to the difficulty of finding a local citizen with first-hand experience of environmental injustice. German participants were also exposed to concepts of environmental injustice through their video exchange with YLEC-India participants who brought to light the severe impacts of climate change on India. In Uganda, the environmental justice speaker was an activist who spoke not of her own experiences with injustice, but of entry points for action to challenge injustice and how to stay safe as an activist (e.g. self-care). YLEC encouraged students in both countries to reflect on their knowledge and experiences in light of environmental justice values through the use of ongoing reflection journals and in-class discussions that asked the students to consider issues of power (through the use of power-mapping activities) and root causes of systemic problems (through the use of a problem-tree activity). These activities also challenged the participants to reflect on their own social location and privilege in the context of climate change and other environmental issues. Such activities and discussions were expected to further contribute to action competence by developing students' vocabulary and conceptual framework related to environmental justice.

Based on these theorised links between YLEC components and action competence, the following sections describe the main findings for each of the two cases under discussion. This is followed by a discussion of the similarities and differences of these two cases, and the overall strengths and challenges of the YLEC model in its efforts to build young people's action competence.

Findings

In this section, we review main findings from each country in regard to the impacts of YLEC on participants' action competence. For this purpose, subheadings are used to highlight each of the four components of action competence: (1) knowledge about environmental issues, (2) reflection on knowledge and experience within the context of one's values, (3) visions of alternatives, and (4) ability to engage in collective action.

Knowledge about environmental issues

German participants reported that their existing levels of environmental knowledge and exposure to related topics in school and society limited the impact of the information imparted through the YLEC materials: "The hard facts are clear and a few details came in [from YLEC]" (GER06). Interpretation of the data suggests that these participants entered YLEC already sensitised to and knowledgeable about the relevant issues because of exposure to existing public discourse about environmental

issues. Adapting the materials prior to the start of the programme to anticipate these circumstances might have resulted in greater impact on participants' knowledge if, for example, new topics were included to build on their existing experiences.

Ugandan participants, in contrast, whose social context provided less natural exposure to environment information than in Germany, largely gained their relatively high pre-existing level of environmental knowledge from their enrolment in related fields of study. These youth expressed a sense of privilege at having had access to the knowledge provided through YLEC and a motivation to share this knowledge with others:

> … because we have knowledge, because the people of YLEC have given us knowledge, if we just sit on it, it would be nothing, it would be like they have wasted their time and ours, like forget it! Cause they give [us] knowledge, [we] should have the chance to give people the wealth of that knowledge. So if we have that knowledge, and we can't use it maximally, it means we are doomed! (UGD015)

Another Ugandan participant expressed how the knowledge she learned through YLEC was meaningful and gave her hope: "the course enlightened me. It really gave me hope … the course, [its] presenters, the reports, the presentations, the facilitators, and the ideas among the students … [I] realized 'this was worth it'" (UGD012).

Reflection on knowledge and experience within the context of one's values

The German students described how hearing directly from the Indian students about their experiences of climate change connected them to the idea of global environmental justice. Most of the German students were emotionally affected by the way the Indian students told their stories as described by this student: "One knew about it [the difficult environmental situation in India], but wasn't so emotionally involved, before. And that really affected me, that video exchange" (GER02). Reflecting on the differential environmental impact of climate change on different parts of the world reframed the problem of climate change to include a global perspective and motivated action. As one student put it:

> Now I realized a bit that we have to do something, some more stuff here, to change the world that's all around. Because before I always wanted to go abroad and try to work there, but now I see that we have to do a lot of work in Germany. (GER01)

These experiences challenged the German students' existing values and beliefs, bringing to light how their own behaviour as well as country-level policies can influence the well-being of people around the world.

Values came out strongly in the Ugandan data. One participant reflected on the importance of love in creating environmental change:

> … because of the knowledge and love I developed in YLEC I've been able, whenever I'm having conversations, I talk about environment … I can't leave the conversation with any friends before speaking at least about [something] small like this … I think if people are told how to love each other, I think everything can be developed. (UGD017)

Ugandan students also emphasised how YLEC had contributed to their understanding of the value of involving community members in changes that might impact their lives:

> … [C]ommunity awareness and involvement has been so much neglected … [If] you want to start a forestation/reforestation [or] you want to try to conserve the wetlands and you [do] not involve the community who are in those areas I think it won't work out. Basically if they are involved the community themselves will take the role of maintaining some or most of these activities … if you impose something onto the community … I don't think it works. (UGD012)

This awareness of the role of the community shows both the students' ability to identify needs and opportunities in their local context and their understanding of the challenges of long-term, transformative environmental change, beyond the individual level.

Visions of alternatives

Activities such as a visioning exercise at the beginning of the programme, through which small groups discussed and drew pictures of their ideal community life, helped the YLEC participants to identify gaps between current states and desired states. Although activities and discussion focused on community-level and systemic alternatives, the data suggest that participants often translated this learning into implications for their own lives. The German students reported how the YLEC experience changed their plans for the future, opening up new lines of action previously not envisioned. A few mentioned that YLEC helped them to clarify and solidify the direction of their career plans. One student described how the course helped him to feel more confident in his qualification for jobs related to sustainability:

> There is this network *Entwicklungspolitik* and they are looking for people to work as educators who go to various schools and teach about topics that have to do with our consumption, sustainability, and the people in those countries, where our products are produced. They also do informational events for people who are interested in becoming such educators and I went to one of these. And maybe, before the course, that would have been too far from my main area of expertise. (GER02)

A couple of participants reported an intention to become involved in internships or volunteer work related to sustainability within the next six months.

Ugandan students also described the impact of YLEC on the vision of their own futures and their ability to continue engaging in environmental issues. As expressed by one student: "Once the course ended I wasn't just sitting like ' … what next?' I had to go on. I had to use the knowledge I've got to share with other people so we can keep the fire burning" (UGD009). Confidence was a major issue in developing a vision of their relationship to the issues:

> … after taking the YLEC course I realized that I can promote change within myself. I can be this person who can stand up on my own and do something about the environment. I can stand up and tell other people this is wrong about what you are doing you're cutting down trees which is not very good. I can be a strong woman and create other people to be around me, to be an activist for change. (UGD026)

The social connections built through YLEC were described as another contributing factor to participants' vision of continuing engagement in environmental action:

> I think the most important one for me is knowing that other people who are interested and actively participating in the environment … it has opened more doors for me because now, before I didn't know [the university professor] … and I didn't know [the leading peer facilitator] by then but after taking the YLEC course they would always meet more people and they would tell us about other projects that [are] happening elsewhere … it got me more involved in environmental issues and other projects and how I can be of help. Yeah, so the network. (UGD038)

Overall, students' vision of alternative futures for themselves, futures that involved environmental action, were promoted by the YLEC experience.

Ability to engage in collective action

Overall, the German students noticed a difference in their engagement over the course of the YLEC programme, leading to higher levels of activity: " … in the beginning of the course, we just listened, and at the end, and this has to do with the action project, we all became more active" (GER04). As that student described, the action project played a major role in building students' skills and confidence for action. Creating an online platform for carpooling at the university proved to be an important yet frustrating learning experience for the students. The students faced significant institutional challenges that required creativity to overcome. They found that their greatest barrier in carrying out the project was the bureaucracy of the university, although this taught lessons to be applied in future efforts: " … every organization has its own bureaucracy and when you have to talk with different organizations, you maybe have to be a little more tenacious. That might be a point that I will

probably take with me for other projects" (GER04). They were frustrated by the fact that they were not allowed to post their flyers around campus and that it took longer than expected to be able to integrate their idea into the university's existing online framework. To get around this barrier and to advertise their platform, the group created a Facebook page. Unfortunately, the web platform had little uptake in the month following its implementation, limiting the students' experience as effective change agents. However, a few participants continued to work on the project after the conclusion of YLEC and several reported that they had learnt skills and gained insights that could inform future action.

Following YLEC-Uganda, participants expressed a sense of responsibility associated with their role as young people: "As youth we have to lead. We are so many youth and if we all really march into environmental justice I'm sure we can be able to even teach these elders and the young ones" (UGD015). The knowledge and skills gained through YLEC reframed previously innocuous practices and provided the youth with tools to make change; this is exemplified by the following participant who described how he noticed and acted to change un-environmental practices in his family-run restaurant:

> I found them being so wasteful. They used water the way they wanted to, they used the power the way they wanted to, they used the charcoal, all those things … slowly I tried to change them … I made these changes, a few small changes. And then our costs are practically reduced by about 5%, which isn't a very big change but I knew it was because of me and I'm proud of it. (UGD002)

Three participants reported involvement in environmental organisations or civic activity before YLEC. Following the programme, 10 students were involved in environmental organisations and three others reported other types of civic engagement. At this level, examples of action taken in the three months after YLEC include forming a community action group to clean a village well, participating in environment-related protests directed at industry and the government, and creating radio show programming to influence the culture of environmental conservation. The fact that these higher level forms of engagement, which often take more initiative and effort, persisted after the end of the course provides evidence for the long-term impacts of YLEC.

The Ugandan action project deserves special mention in this regard. Having learnt how to build a stove that uses one-seventh of the fuel needed by a typical cook-stove and reduces negative health impacts of smoke inhalation, the participants described using this knowledge to contribute to their communities' well-being. Nine students reported building or purchasing at least one stove for their own family and, in many cases, building up to 10 stoves for others households in their villages. Five other students stated intentions to build a stove for their families. A group of three students applied for funding to travel as a team to different villages to build these stoves and educate the residents about energy efficiency. Several YLEC participants are involved in a five-year (2015–2019) environmental awareness project that is jointly implemented by the second author and JEEP, together with another local partner (Safe Neighbourhood Foundation) and an international partner from Denmark (Seniors without Borders). In this project, the YLEC stakeholders (youth and adults) serve as lead facilitators in delivering environmental awareness seminars to local leaders, youth, and the general community in six Eastern Uganda districts faced with severe climate-related hazards (including prolonged droughts, floods, landslides, and deforestation). The skills and knowledge gained from YLEC, particularly through the action project, directly support the students' ongoing engagement in these various forms of collective environmental action.

Discussion

Overall, the results of this study indicate that the YLEC programme acted as a catalyst, frequently building on the knowledge and previous experiences of the participants to activate new forms of engagement and action. Knowledge regarding environmental justice and community engagement was added to their previous training in environmental fields, and channels for engagement at

various levels of the social world were made accessible. These findings are encouraging and suggest that education projects working with a multi-national scope can effectively build on cultural and social diversity to equip young people to be confident and capable environmental actors.

A striking feature of the outcomes observed in Uganda is the degree of initiative taken by the youth to utilise the resources and opportunities made available through YLEC; the resulting actions are diverse, widespread, and highlight the community service orientation of the youth. Du Preez and Möhr-Swart (2004) highlight that cultivating an orientation towards community service is vital for environmental education initiatives aiming to "awaken in the future generation a deep and lasting concern for the environment and for sustainable development" (p. 17). Through YLEC, this outward orientation was nurtured, reflecting Ugandan cultural values of egalitarian collectivism (Johnson *et al*. 2013) by validating participants' existing concern for environmental well-being and building on it with concepts of justice, equity, and widespread participation. The data indicate that YLEC's strong collaboration with JEEP was particularly important in this regard because it brought to life the concepts explored in the workshop series by linking them to concrete steps the youth could take to contribute to community and environmental well-being. This is an important contribution of YLEC to action competence.

The long-term impact of the strong collaboration between the students and the community partner indicates an important component of the YLEC approach. It is already well established that real-world action is an important step for meaningful engagement with environmental learning (e.g. Hungerford and Volk 1990, Mitchell and Mueller 2011, Clover *et al.* 2013) and that it is also vital to overcome the often-individualistic mode of environmental education (Uzzell, 1999). Our findings suggest that linking young people to strong partnerships with environmental organisations builds on isolated action experiences to facilitate sustained motivation and further opportunities for individual and collective action. YLEC-Germany and YLEC-Uganda both attracted students with relatively similar levels of environmental awareness and experience, in the former case because of national culture and in the latter case because of the students' environmental studies. Our analysis shows, however, that the Ugandan students experienced greater impacts on their action competence, particularly evidenced by their involvement in long-term action beyond the end of the programme. The ongoing support provided by the Ugandan community partner, both in-class and through the action project, established meaningful links between the knowledge learnt in the YLEC sessions and the skills learnt through the action project. This left the participants empowered and connected to JEEP following the end of YLEC, which led to the ongoing involvement of several of the participants in meaningful action. A similar approach in Germany could have led to better outcomes from the action project and therefore greater impacts on students' action competence.

Another explanation for the different outcomes between the two groups' action projects is that the YLEC-Uganda group experienced more success with their action project than did the YLEC-Germany group. Although achieving action goals is not the only determinant of a successful education project, bureaucratic barriers such as those faced by the YLEC-Germany group can lead to feelings of powerlessness in the face of institutionalised decision-making (Jensen and Schnack 1997, Räthzel and Uzzell 2009). Although participants reported gaining insights and skills that could be transferred to other environmental action, it is possible that an implicit message of powerlessness overshadowed YLEC's intended message of empowerment and engagement. Räthzel and Uzzell (2009) suggest that in such cases, students be guided to examine the structural power relations that created the barriers that are impeding environmental action. Jensen and Schnack (1997) suggest that these cases are also opportunities to recognise the importance of collective action and social movements for creating change. Although some ad hoc conversations along these lines occurred in the YLEC-Germany group in response to the challenges faced by their action project, YLEC and other such education projects would benefit from planning for such conversations in advance.

A strength of YLEC-Germany was the international exchange with the YLEC-India group. Learning about other young people's experience with climate change and the direct impacts environmental

events have had on India heightened the German participants' understanding of environmental justice. The growing sense of personal responsibility as residents of a privileged nation is arguably the result of YLEC's ability to "tune in" to the German participants' lived experience (Shulman 1992, Curry-Stevens 2003), anticipating the need for direct exposure to similar people (i.e. other youth) with a very different lived experience. Encountering their privilege in relation to others' oppression helped participants to acknowledge the contributions yet to be made by Germany in promoting global equity, rather than locating the "solution" to climate change in developing countries. This realisation was guided by the facilitators, who also lived in Germany and were trained by the YLEC team to challenge and support the participants as they grappled with implicit assumptions about their and others' roles in responding to climate change.

Between these two cases, then, we see that YLEC-Uganda's strength lay primarily in its ability to form strong connections with community resources, establishing long-term opportunities for the youth to engage in environmental actions where, previously, such opportunities had been out of reach. This strength builds on Ugandan cultural values of mutual responsibility and collectivism. YLEC-Germany's strength, in contrast, lay in exposing youth to the assumptions born of privilege, casting international relations into new light and inspiring ideas for action to promote environmental well-being for all. This strength built on the participants' lived experience as citizens of a privileged country.

As a global issue, climate change requires a global response. This poses challenges considering the varying cultural, social, economic, political, and environmental dynamics experienced by different countries. YLEC, as a multi-national programme and study, sought to learn about how to best build young people's environmental action competence within these contexts while also building their capacity to think on a global scale. The different impacts on each group, described in this paper, are to be expected for such programmes. Vygotsky's concept of zones of proximal development (1978) suggests that appropriate support can help students reach beyond their existing level of knowledge and competence to attain new heights of ability (Silver, 2011). Given their different contexts, the Ugandan and German participants had different levels, or perhaps forms, of existing knowledge, skills, and opportunities. Consequently, the type or direction of next steps was different for each group. Standardised expectations for outcomes would be misplaced in these types of initiatives that engage with diverse contexts. These results suggest that attention to current and potential forms of engagement is vital to designing and delivering effective environmental education in diverse nations.

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