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Educating for post-disaster sustainability efforts

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ABSTRACT

Urgent sustainability problems call for accelerated and transformational change. Disasters can provide opportunities for accelerating such change towards sustainability by eliminating the impediments of "normal times," but only if a new breed of change agents is able to seize these opportunities. However, current educational programs in sustainability and disaster risk management insufficiently prepare change agents for this challenging task. Recent reforms of curricula, institutional innovations, and actual experience from such change agents could be used to help design curricula that train students in seeing and seizing post-disaster opportunities for change towards sustainability. Linking sustainability education and disaster risk management education might be a co-benefit in the future.

1. Introduction

Urgent sustainability problems, such as climate change, loss of biodiversity, socio-economic polarizations, and urbanization in disaster-prone areas, are reaching tipping points that jeopardize a "safe and just operating space for humanity" [54,57]. Acknowledging a "world threatened by catastrophic increases in disaster risk," the United Nations calls for shifting from managing disasters to managing risks to disasters; in other words: to manage for sustainable development [70]. Yet, to date, responses addressing the challenges of sustainability are often too slow and do not match the urgency of the problems [72].[1]

Disasters are recognized as catalysts of change [16] and provide opportunities for accelerating change towards sustainability as compared to "normal times" [21,3]. As Schwab ([59], p. 6) note "amid all the frustrations and sorrows of post-disaster recovery, there are opportunities. The most resilient communities are those with the civic mindset to seize on those opportunities to create new visions for the future." Opportunities emerge from disasters because they break, at least temporarily, entrenched path dependencies and inertia [51]. The destruction wrought by disasters is thought to create a blank slate, for instance, for building houses and infrastructures from scratch. It also offers a "reset button" for social re-figurations to lessen vulnerabilities and enhance social justice [3,49]. The influx of media representatives, donors and investors during and after disasters draws attention and political will to social, environmental and economic issues that are unable to garner such support in normal times [28].

While disasters provide opportunities for change, it is unclear, who is able to see and seize these opportunities to accelerate change towards sustainability. This skill set becomes even more urgent because of unraveling sustainability problems and increasingly frequent extreme weather events [35], which over the past decade have caused the majority of major disasters worldwide [26]. "While no one in their right mind would wish for such events to occur in order to achieve [sustainable] outcomes," Schwab et al. [59, p. 159-160] argue, a crisis is a "terrible thing to waste;" therefore "communities should be prepared to make something positive happen as a result [of the disaster]." However, few accounts exist on how people and organizations were able to see and seize opportunities to accelerate change towards sustainability providing lessons learnt [21]. In contrast, a variety of studies document how alliances between corporate and state actors seized disasters as opportunities to accelerate neoliberal interests, exacerbating pre-disaster inequalities, also described as "disaster capitalism" [43] and "second tsunami" [76]. During post-disaster recovery, various and often interconnected processes take place simultaneously that entrench and challenge pre-disaster vulnerabilities and power structures [25]. The ability to perceive opportunities for change towards sustainability that benefit the greater good is unevenly spread, as it depends on individual dispositions (e.g., mindset, social and economic capital, sustainability experiences) and contextual factors (e.g., governance structure, social fault lines, scope of impact) [21]. Moreover, few professionals are trained in leveraging post-disaster opportunities for sustainability and resilience goals as stated by the American Planning Association [59].

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[1] The term "disaster" refers to the pressure-release model explaining how a (natural) hazard, impacting a place, translates into a disaster as people and ecosystems have different levels of vulnerability, shaped by unsafe conditions, dynamic pressures, and root-causes [80]. Natural hazards often compound with other hazards such as war or technological, chemical or nuclear hazards (as in the Great East Japan Earthquake, March 11, 2011: …; or the Indian Ocean Tsunami 2004, devastating the coast of Aceh, Indonesia). In the latter two instances, the ensuing disaster was perceived as an opportunity for change towards sustainability, including peace and renewables, respectively [30,9].

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This statement rings true also for disaster management and sustainability practitioners [65].

To help close this gap this study proposes an approach for education and capacity building that could be integrated into sustainability as well as disaster risk management programs in higher education institutions. The research question for this study is: *How can change agents be trained to pursue change towards sustainability not only during normal times, but also after disasters*?

To answer this research question, I combined primary data from my own research [21] with data from a literature review on universities' engagement in disaster recovery and on educational approaches in disaster risk management and sustainability. The term "change agent" refers to individuals that self-identify as someone aiming to bring about change; a sustainability change agent develops "the skills, persistence and resilience to contribute to the emergence of healthy ecosystems, social systems, and economies." ([46], p.9).

The paper is structured as follows. Section 2 describes the research design. Section 3 reviews programs educating change agents for post-disaster sustainability pursuits and Section 4 identifies gaps in this education. Sections 5 and 6 suggest a set of aspired competencies and a pedagogical approach for such an education. The paper concludes with practical implications.

2. Research design

This study synthesized evidence from secondary and primary research. The case study sites of Indonesia and Aotearoa New Zealand (Canterbury Earthquakes, 2010–2012) were selected as both places purported to seize disaster recovery as opportunity for change towards sustainability [7,12,30]. Moreover, my research took place five to ten years post-disaster, allowing for understanding processes in a temporal context, which is critical for disaster recovery research [66]. Fieldwork occurred from 2014 to 2015 and consisted of semi-structured interviews with leaders of sustainability initiatives related to daily activity fields including educating.[2] Interviews were anonymized through a neutral coding scheme.[3] Interviews explored how people leveraged opportunities for sustainability in the aftermath of disasters [21]. Interview data drew attention to the role of universities transforming into change agents (for sustainability) in post-disaster contexts. These universities' achievements offer lessons that can guide similar efforts in the future. Interview data also reflected skills similar to those entailed in the key competencies for sustainability [10,55,77] inviting a comparative analysis. I reviewed educational approaches related to sustainability-oriented disaster recovery, from both disaster risk management programs and sustainability programs. I finally synthesized findings into a pedagogical proposal on capacity building for post-disaster change towards sustainability.

3. Suggestions from existing educational programs

Recent developments in disaster risk management programs and sustainability programs in higher education offer suggestions towards a comprehensive program to educate change agents for post-disaster sustainability pursuits.

The first suggestion is to adopt a sustainability-oriented approach to post-disaster recovery education. Some programs exist that take a holistic view on disaster recovery, which aligns with a comprehensive sustainability perspective. The *Center for Rebuilding Sustainable Communities after Disasters* at the University of Massachusetts in Boston, USA, for example, adopts a multidisciplinary approach to train students and disaster managers in sustainability-oriented recovery (c.f. [22]). Similar to solution-oriented sustainability education, this program engages in practical recovery projects collaborating with partner organizations. Another example is the master program in *Disaster Risk and Resilience* offered in partnership from Lincoln University and the University of Canterbury, Aotearoa New Zealand. This program stresses the importance of planning in advance in order to cope with disastrous events. It also educates students to devise and implement community engagement approaches that support communities' efforts to prepare for, respond to, and recover from disasters [60].

The second suggestion is to apply experiences from universities responding to disaster. During disasters, some universities identified opportunities to change their programs and structures in support of local sustainable development. These efforts resulted in new courses, educational and research programs and changes in institutional structures. I present below three examples (additional examples: [8,9,18,52]).

The University of Canterbury in Christchurch responded to the devastating 2010–2012 earthquakes by establishing a novel program. Following suit on the groundbreaking work of the *Student Volunteer Army*, an academic service-learning program was developed to involve students in community-based disaster recovery projects [50], similar to sustainability programs engaging in local sustainability projects [78], yet with a focus on service-learning as opposed to research collaboration. Moreover, to facilitate interactions among members of the community and the university, the university established the *UC Community Engagement Hub*. The hub facilitated engagements, and its program offered students to critically reflect on their academic learning and general belief systems in the context of disaster recovery. These experiences helped students acquire some competencies for post-disaster recovery.

The developments at the University of Canterbury were guided by Tulane University, USA, which seized an opportunity for transformation presented by Hurricane Katrina [13]. Tulane University's president at that time stated: "For the city, the attention generated by Katrina brought resources and ideas to problems that had been too long ignored. For Tulane, the storm was equally important in raising strategic questions about the mission of the institution, its interdependence with the local community, and the role of universities in producing engaged citizens and future leaders." ([24], p. 3) Tulane University changed its mission statement, shifting emphasis from international academic impact to positive local change through collaborative university-community partnerships. These addressed health care, education, housing, and public spaces, which constituted long-standing societal problems and injustices exacerbated through Hurricane Katrina. The changed university mission translated into new networks involving people from the university, the city and communities; research agendas and committees focusing on co-creating solutions; and a new curriculum on community-engagement for Tulane's students, offered through the new *Center for Public Service*.

In Aceh, Indonesia, the devastating Indian Ocean Tsunami from 2004 brought the opportunity for a peace agreement after 30 years of conflict. The peace agreement was leveraged to redefine laws, including those structuring the province's educational sector: access to educational options; democratic representation of the local level (e.g., community boards); recognition of diversity (e.g., linguistic, religious, ethnic); and accounting for post-conflict recovery [64]. Additionally, a new master degree in disaster management and two research centers, the *Tsunami Disaster Mitigation Research Center* and the *International Center for Aceh and Indian Ocean Studies*, were established. The latter provides students with applied research opportunities on peace and conflict related to disaster recovery. Yet, Aceh did not fully leverage the four educational opportunities and insufficiently addressed past inequities as well as actively built peaceful relations, but there are still opportunities to seize [64]. Small-scale initiatives have begun to

[2] Daily activity fields include: housing, eating, being mobile, working, educating, shopping, recreating, communicating, caring, worshipping, engaging [32,39]. The number of interviews with leaders of sustainability initiatives (change agents) across all daily activity fields was 50 (Indonesia) and 46 (Aotearoa New Zealand).

[3] The codes starting with "RI" (Indonesia) refer to respondents of the Indonesian case study and codes with "CC" (Christchurch) refer to respondents of the Aotearoa New Zealand case study.