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Healthy children, healthy planet: The case for transformative sustainability education in schools and early childhood from an Australian perspective

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Abstract: Climate change is an urgent global public health issue with substantial predicted impacts in the coming decades. Concurrently, global burden of disease studies highlight problems such as obesity, mental health problems and a range of other chronic diseases, many of which have origins in childhood. There is a unique opportunity to engage children in both health promotion and education for sustainability during their school years to help ameliorate both environmental and health issues. Evidence exists for the most effective ways to do this, through education that is empowering, action orientated and relevant to children's day to day interests and concerns, and by tailoring such education to different educational sectors. The aim of this discussion paper is to argue the case for sustainability education in schools that links with health promotion and that adopts a practical approach to engaging children in these important public health and environmental issues. We describe two internationally implemented whole-school reform movements, Health Promoting Schools (HPS) and Sustainable Schools (SS) which seek to operationalise transformative educational processes. Drawing on international evidence and Australian case examples, we contend that children's active involvement in such processes is not only educationally engaging and rewarding, it also contributes to human and environmental resilience and health. Further, school settings can play an important ecological public health role, incubating and amplifying the socially transformative changes urgently required to create pathways to healthy, just and sustainable human futures, on a viable planet.

Keywords: Transformative education, education for sustainability, health promoting schools, sustainable schools

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INTRODUCTION

Climate change is recognized as a major threat to global health by leading scientific and medical journals (1,2), the World Health Organization and the Intergovernmental Panel on Climate Change (IPPC) (3). Notably climate change and its consequences threaten attainment of the United Nations Millennium Development Goals of reducing child mortality, achieving universal primary education, eradicating poverty and hunger, and ensuring environmental sustainability (3). Ultimately, from a global perspective, it is the poor and young people, especially in developing counties, for whom the implications of climate change are predicted to be most severe (2). Decisions and actions taken now will have intergenerational consequences, with delayed or uncoordinated global action on emissions reduction predicted to significantly increase risks to human survival and wellbeing, including costs and difficulty of adaptation (3,4). While not the complete answer, education has an important role in imagining a safe climate future, and transforming unsustainable patterns of living (5).

Australia is recognised as one of the developed countries most vulnerable to the impact of climate change (6). A recent analysis of environmental threats to children's health in the Australian setting (7) identified the following potential impacts of climate change:

- changing patterns of infectious and vector-borne diseases such as dengue fever
- heat stress and health effects of extreme weather events such as fires, floods and cyclones
- effects of changing plant growth on allergen levels and asthma
- water and food insecurity
- pressure on children's mental and emotional health due to drought, concerns about climate change, and from traumatic exposures to fires, floods, and storms.

The report also noted that, compared with adults, children's earlier and more prolonged exposure to climate change-related stresses over their lifetimes is likely to amplify these adverse health impacts.

Concurrently, global burden of disease studies highlight a range of chronic diseases, many having their origins in childhood (8). While children's health has improved in many developed nations over recent decades, concerns include rising rates of childhood obesity, asthma and mental health problems (9). A "big picture" view incorporating the profound social changes occurring in the modern world helps in understanding the changes in young people's health and wellbeing in rich countries. Family breakdown, media and technological impacts, dietary changes, and "cultural intangibles" like increasing individualism, excessive materialism and hyper-consumer lifestyles have been identified as part of the changing ecology of childhood (10,11). In drawing attention to links between such changes and children's health, some commentators suggest that recent decades of dramatically expanding market-based economic growth have failed to deliver the social and environmental dividends that were promised (10,12,13).

Mental health problems are already the largest contributor to the burden of disease in Australia's young people (14) with evidence that these problems are growing and persisting into adolescence and adulthood (11). New research

also shows that, along with more personal concerns about how they look, not fitting in, or bullying for example, children are concerned about the state of the world. A 2007 Australian Childhood Foundation survey of children 10-14 years, found that 52% were worried about not having enough water in the future, 44% about the impacts of climate change, 31% that they will have to fight in a war when they get older, while 36% were apprehensive about terrorism. The report found: "A quarter of children are so troubled about the state of the world that they honestly believe it will come to an end before they get older" (15).

Children are particularly vulnerable to distress and anxiety associated with their growing awareness of the risks of climate change (16). Additionally, their parents' mental distress and anxiety in response to the direct and indirect impacts of climate change may result in negative impacts on parenting. The risk of child abuse and neglect for example, is elevated following extreme weather events such as cyclones and tornados. These cumulative and interacting direct and indirect impacts mean that young children are at amplified risk of harm due to environmental stress. Therefore interventions promoting mental health and resilience in childhood, particularly those that build parent and community resilience at the same time may be effective in reducing the future burden of mental illness.

A role for education in addressing public health impacts of climate change on children

The fourth IPCC report (3), Britian's Stern Review of the economics of climate change (17), and Australia's Garnaut report (7) have heightened awareness of how the Earth's life support systems have been over-stretched, putting human health at risk. The urgent need for fundamental changes in how we live is increasingly obvious, although little systemic change is yet evident. While recognising that schools and education systems are already under pressure with competing and often contradictory demands and a "crowded curriculum", education must also equip children and young people to function and flourish in an uncertain world. Effective education for the twenty-first century will need to help them cope with and lead the social transformations required for a transition to a safer-climate, low-emission future.

However, learning based on worldviews that reinforce unhealthy, unsustainable lifestyles and environments is a significant part of the problem. "The crisis… cannot be solved by the same kind of education that helped create the problems" (18). Much recent educational reform is more about adapting educational policy to the demands of a globalised market economy - encouraging people to adapt to change rather than developing their capacities to shape change (19). If education is to be effective in socialising the young to become resilient, healthy individuals and active citizens in an ecologically-recovering world, we need transformative, transdisciplinary education to assist humans to understand and work within the Earth's ecological systems (6).

This paper argues that children are capable of being active players in enacting the societal change processes required to meet climate change challenges. It contends that their participation will promote not only environmental sustainability, but also health and educational achievement. Evidence exists that the most effective ways to do this are through education that is empowering, action orientated and relevant to children's day to day

concerns.

The focus of this paper

This discussion paper describes two internationally implemented whole-school reform movements, Health Promoting Schools (HPS) and Sustainable Schools (SS) which seek to operationalise transformative educational processes. Both HPS and SS derive their socially critical and emancipatory underpinnings from Freirian approaches that see education as a vehicle for personal, social, and political empowerment, as expounded in Freire's seminal work "Pedagogy of the Oppressed" (20). There is evidence that both approaches, separately, can be effective in either promoting health or educating for sustainability. This paper, however, reflects on these two approaches and presents case examples drawn from the literature and from the authors' experience to argue that each would be strengthened, both in concept and in practice, by integrating with the other to holistically educate for health and sustainability.

Health promoting schools (HPS)

Essentially, HPS is the application of a public health approach in school settings (21), moving away from single-issue, classroom-based health education, towards a more holistic and comprehensive approach. The HPS concept emerged in the 1980s and 90s through the World Health Organisation (WHO) in Europe, and the United States Centers for Disease Control, and is based on socio-ecological understandings of health and of schools as settings for health development (22-25). The global spread and local adaptation of the HPS concept can be traced through the reports of a series of technical and expert committee meetings and initiatives involving WHO, the US Centers for Disease Control and Prevention, and parallel organizations in education such as UNESCO.

Vince Whitman and Aldinger's 2009 Case Studies in Global School Health Promotion illustrates the many purposeful ways the concept has been utilized to address national and local health priorities in countries with differing challenges, cultures and circumstances (21). Health Promoting Schools are now found in Europe, the Americas, the Middle East, Asia, Africa, and the WHO Western Pacific Region, including Australia and New Zealand. The European Network for Health Promoting Schools, renamed Schools for Health in Europe (SHE Network) in 2007, is active in over forty three countries (26), while the ten-year-old United Kingdom Healthy School Standard program is recognized as a key delivery mechanism for UK national public health and social development initiatives such as the Children's Plan (2007) and Healthy Weight, Healthy Lives (2008) (27).

At its best, HPS is a comprehensive, setting-based approach, reflecting the critical socio-ecological underpinnings of the WHO's Ottawa Charter for Health Promotion (22) and Sundsvall Statement on Healthy Environments (23), both of which drew attention to the links between empowerment, health and environment. In recognising the importance of environments, the Ottawa Charter identified as essential conditions and resources for health: peace, shelter, education, food and income, a stable eco-system, sustainable resources, social justice and equity (22). The settings approach shifts the emphasis from individual behaviour change towards community action in the everyday settings of life, to improve the broad determinants of health (22). A health promoting school is also described as one that is continually creating and improving the physical and social environments that strengthen its capacity to be a healthy

setting for living, learning, working and playing (28). As such, it is always a work in progress.

Key principles for HPS are: upholding social justice and equity; student participation and empowerment; creating safe and supportive school environments – both physical and social; and, linking health and education issues and systems. Ideally, HPS model, in microcosm, how a healthy and sustainable world might function. The approach promotes wellbeing and learning through:

- curriculum - active, participative classroom practices
- environment/ethos - improving a school's physical and social environments
- community partnerships - forging partnerships with parents, local community and relevant community agencies (24).

Figure 1. HPS components

Participation is central to success. By including everyone, and in particular, children, the democratic HPS process allows groups with different agendas to come together to identify common interests, and achieve shared goals. This builds cooperative, social skills in both adults and children. Through mediating between competing interests, it builds ownership, commitment and a sense of community. Stewart et al (30) found that a Health Promoting School environment that creates a strong sense of autonomy and builds "connectedness" between adults and children and between children and their peers, is a major contributor to children's psychological resilience. With its focus on active student participation, the process also recognises that even very young children can be competent thinkers about issues that impact on their lives and wellbeing. It helps develop student and community abilities to take action for change, for healthier lives and healthier living conditions. This "action competence" (31) grows through critical thinking, planning, and real-life experiences of action-taking to improve the relevant health issue or situation (see Box 1, a primary school example). In this way, children are personally involved in creating a better, healthier, and more enjoyable classroom, playground, school, community or world. Such experiences of "making a difference" build individual and collective empowerment, self-efficacy and mental wellbeing (32).

BOX 1.

An important aspect of health promotion and HPS is that participants implement the concept flexibly, in response to their own locally identified needs, to meet their own goals, as illustrated in box 2.

BOX 2.

There is sound evidence of the effectiveness of comprehensively-implemented HPS programs for improving health outcomes, particularly related to healthy eating, physical activity and mental health (34). In Australia, major national

educational curriculum and professional development programs utilizing HPS include the National Nutrition Education in Schools program (1995), Mindmatters (2002) and KidsMatter (2006). Moreover, the benefits of HPS extend beyond health. A review of National Healthy School Standard school evaluations in the UK found improvements in learning environments, student concentration and performance, staff health and wellbeing, and student school achievement (35).

Sustainable schools

While environmental education and education for sustainability are not entirely new fields – they share a history going back to the 1970's - the comprehensive, whole school approach exemplified by international movements variously called Eco-schools, Green Schools, Enviro-schools and Sustainable Schools (SS) is a more recent development, and less well established and coordinated than HPS. Broadly, Sustainable Schools (as it is called in Australia) encourage schools to achieve measurable social, environmental, educational and financial outcomes by:

- going beyond awareness raising to action learning and integration with school curricula
- encouraging the involvement of the whole school
- encouraging the involvement of a school's local community and encouraging a shift in the broader community towards more sustainable practices and processes
- developing relationships with other areas that impact on the organisation and management of a school
- being founded on a sound basis of theory and practice in schools and school systems, quality teaching and learning, environmental education for sustainability (see http://www.environment.gov.au/education/aussi/about.html#principles).

Sustainable Schools make a direct contribution to the United Nations Decade of Education for Sustainability 2005-2014 (36) by encouraging and supporting schools to develop a culture of sustainability. Underpinned by critical theoretical approaches aimed at challenging the status quo and creating active, informed citizens, SS implement improvements in their management of resources and grounds, and integrate this into the existing curriculum and daily running of the school. The goal is that students participate in action learning within the school as a 'learning organisation' in which people at all levels, individually and collectively, continually increase their capacity to produce results they really care about (37).

While still in its early days, initial evaluations (38,39) are encouraging. In one country school in Victoria, Australia for example, the amount of waste sent to landfill was reduced by 90%. As in HPS, SS schools are also reporting broader social and educational benefits from increased school pride, interest and involvement in learning. Box 3 highlights two examples of this process.

BOX 3.

Green and healthy schools: The case for integrating education for health (HPS) and sustainability (SS)

Human health and the health of the planetary ecosystem are interdependent, and educating for health and for sustainability, have much in common. It is logical to integrate health education with education for sustainability. Both use holistic whole-setting approaches and involve parents and community. Both are participatory and action-based. Both are student-centred and empowerment-focused for addressing real-life, health and environmental issues of importance to the children in their local settings and neighbourhoods. Indeed, there is a growing list of educational initiatives which have health goals in mind, and which also meet education for sustainability goals: e.g. creating "green" outdoor play and learning spaces promotes mental and social health and provides for physical activity (health issues), and also enhances contact with nature (environmental issues) (6).

Research has identified a range of educational and well-being benefits of schools with "green" grounds, "learnscapes", edible school gardens and other opportunities that integrate classroom and outdoor learning in nature (43,44). In general, demonstrated benefits of gardening and other learnscaping activities include increased play opportunities, engagement and reflective citizenship, safety, social inclusion, better relationships with the natural world, and increased environmental stewardship. There are also benefits for learning and academic performance, and for curriculum and classroom management (43,44).

One example from a public school in a disadvantaged area in Sydney (Australia) illustrates the power of such approaches on individuals, as well as on school ethos (see box 4).

BOX 4.

Integrating education for sustainability's explicit focus on the natural environment increases the salience of health promotion and health education in schools. It provides processes that go directly to the heart of many of today's student anxieties about the world and their future in it. The multiplier effect of early childhood influences on lifelong development and health (10) means that programs integrating health promotion and education for sustainability in early childhood settings such as child care and kindergartens may prove equally or even more beneficial than those in schools (32).

Intrinsic to both HPS and SS approaches is their close, bi-directional relationships with parents and the broader community. This means that not only are children actively engaged in interesting educational work that fulfils learning, health and environmental needs, but the flow-on effects include community engagement and learning, and community capacity building, often highly valued by those involved. Furthermore, schools can learn from, and help each other, to implement such integrated processes, as illustrated in box 5.

BOX 5.

The case examples presented here and other evidence from the research literature support the contention that active participation in identifying and addressing issues and topics of concern to students and their communities is not only educationally rewarding, it also contributes to human and environmental

resilience and health. Such hands-on approaches to education for sustainability and health promotion, including for example, school kitchen gardening initiatives, not only improve schools' educational effectiveness and outcomes - a school's 'core business' - but are intrinsically engaging and enjoyable to students, their families and communities. Moreover, they can help restore children's connection to the natural environment, while nurturing hope, physical and mental health, and personal and collective efficacy to respond to challenges. In so doing, kindergarten and school settings can play an important ecological public health role, incubating and amplifying the socially transformative changes required to create pathways to healthy, just and sustainable human futures, on a recovering planet.

As noted, HPS and SS share the same socio-ecological foundations and transformative orientations. By working together to create 'green and healthy' schools that nurture human and environmental resilience simultaneously, schools can play a constructive role in creating green and healthy futures. While not easy to do, these examples show that it is possible and that the returns are rewarding. However, there are structural and cultural barriers to cross-sectoral partnerships between health, education, and environment which need to be further broken down. Within schools, a crowded curriculum, and pressure to focus on narrow outcomes such as literacy and numeracy at the expense of transdisciplinary concepts like sustainability, citizenship and health, limit opportunities for such educational innovation. The lack of attention to transdiciplinary learning and teaching also pervades preservice teacher education and teacher professional development. This has led to a teacher workforce ill-equipped to support the curriculum and pedagogical approaches required for holistic learning and teaching. Similarly, health professionals need further skills to partner respectfully and effectively with educators, students and communities, and to embrace ecological, holistic and empowerment paradigms that capitalize on the strategic public health and environmental gains that can be achieved.

Furthermore, small scale changes within individual schools and local communities need to be connected into a large scale movement if green and healthy education is to take hold. What is needed to scale-up and fast-track the processes more broadly within education is for the adoption of a systems approach to creating change. This requires both top-down and bottom-up strategies, for example support at national Health, Education and Environment Ministry levels, at regional policy levels (21), and practical implementation assistance at local authority and school levels. Such support would include an explicitly central, rather than marginal, place for ecology/environment and wellbeing in curriculum frameworks, mandated time allocation, quality guidelines for green and healthy schools, new teacher standards and professional development to support participatory education approaches, curriculum and teacher materials, and human and financial resources. A good example of the latter is provided by the United Kingdom Healthy Schools Standard which has funded and guided partnership development between local health and education authorities. Governance organizations in Health and Education, including teacher and health professional registration authorities, Health and Education faculties, curriculum development organisations, employing authorities and other systemic partners, must all work together to create cultures of sustainability in Education and Health. Such system-level support is vital for guiding and supporting the changes needed to confront the

current and emerging health and environmental challenges, in tandem with the motivation and energy of individual school communities, and health organizations.

CONCLUSION

Whole-school, empowerment and action-oriented approaches such as those outlined in this paper have the potential to engage children, families, teachers and communities in helping to change society's direction. Truly transformative change is urgently needed and HPS and SS have the potential to be important contributors. Working together to create green and healthy schools plays a constructive role in creating green, just and healthy futures. This emerging field - at the intersection of health promotion, environment and education - presents new opportunities for effective public health approaches to preventing the worst effects of climate change. It also has the potential to create innovative and vibrant partnerships for interdisciplinary action and research, including action research approaches, into how educational interventions can promote positive responses to current challenges. Australian and international evidence is growing that active involvement is not only educationally rewarding, it contributes to both human and environmental resilience and health. Such holistic innovations, rather than approaches embedded in narrow, discipline-based or economically rationalist thinking, can result in schools whose students and communities can lead change, rather than resisting or following it. Practitioners and researchers in education, health and environment will be important in building and testing the evidence base for transdisciplinary education in a range of settings including cities, megacities, suburban, rural and remote environments and communities. The case examples described in this article attest to the fact that educational settings can also play an important ecological public health role, incubating and amplifying the socially transformative changes required to create pathways to carbon-constrained, safe climate futures, on a recovering planet.

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