Planting sustainable seeds in young minds: the need to teach planetary health to children

The COVID-19 pandemic, rooted at the human–animal–environment nexus, illustrates the urgent need for heightened awareness and action on planetary health.[1] To avoid future outbreaks and ensure a liveable future for coming generations, the planetary health approach should be founded not only on transdisciplinary and cross-sectoral collaboration but also intergenerational knowledge exchange and understanding between adults of today and of tomorrow.

Ensuring the meaningful participation of today's school children in policy and decision making on planetary health means breaking barriers, ranging from resistance by authorities to exclusion from spaces of public discourse.[2] However, sustainable transformation for planetary health in the long term will require lasting behavioural change on a generational scale. Educational systems worldwide should reorient themselves towards improving the health of people and the planet,[3] and this reform should include not only university undergraduate students but also children and adolescents, to change society's view of the planet.

Early school years are an important period for building a strong foundation for children to become creative, capable, independent, responsible, and resilient individuals. Therefore, children should be introduced early on to the linkages between the environment, animals, plants, and human health, as well as the behaviours that they can adopt and action that they can take to protect their health and respect nature. Young people who learned about climate change in primary and secondary education (ie, kindergarten to 12th grade) have been reported to show reduced vulnerability and increased adaptive capacity to natural disasters and climate change in adult life.[4] A school-based project on waste education at primary schools in South Yorkshire, UK, was also shown to be effective in influencing parents' waste management practices at the household level, leading to increased participation in recycling and decreases in residual waste.[5] Similarly, educating children about the connection between human, animal, and environmental health has been shown to increase students' interest in pursuing future careers in science, technology, engineering, and mathematics.[6]

To date, the priority for education on planetary health has been the incorporation of planetary health content into the curriculum of colleges and universities.[7] Such a focus neglects younger age groups in primary and secondary education who might become future politicians, teachers, parents, or other influential people. Because mindsets and habits form early in life, early planetary health education will inculcate positive values and practical skills that are necessary for becoming citizens who are conscious about planetary health and stewardship in adulthood. Introducing age-appropriate themes on planetary health in primary and secondary education will also prepare students for advanced training on planetary health in college and university.

The 12 cross-cutting principles for education on planetary health proposed by the Planetary Health Alliance provide a good starting point.[8] Existing health and environment content in primary and secondary education should be reviewed, enhanced, and aligned with these principles, and others that underpin related transdisciplinary frameworks, such as One Health and EcoHealth.[9] Universities with existing programmes on planetary health should forge linkages with primary and secondary schools and support the development of age-appropriate curricula. Primary and secondary school teachers should also be trained not only about topics on planetary health but also new ways of teaching, such as problem-based and student-centred learning.

Currently, several initiatives have started bringing planetary health to primary and secondary schools. In 2019, the Italian Government mandated education on climate change for children of all grades.[10] Meanwhile, an educational strategy programme based on One Health, developed by One Health Sweden, has been introduced into Swedish secondary schools.[11] In the USA, the Foreign Animal and Zoonotic Disease Defense Center (Texas A&M University, TX) has been providing One Health modules to high schools in several states.[12] Co-convened by the One Health Commission and One Health Initiative, the International One Health for One Planet Education Initiative is leading the development of a global curriculum for One Health and wellbeing for all educational levels, including primary and

For more on **One Health Sweden** see https://www.slu.se/ohs

For more on the **One Health for One Planet Education Initiative** see https://www.onehealthcommission.org/en/programs/one_health_education_task_force/

For more on **One Health Lessons** see http://www.onehealthlessons.com

secondary education. Additionally, One Health Lessons has developed teaching materials for students aged 6–18 years and beyond that focus on the relationship between the environment, animals, and humans. At the time of writing, these lessons are being translated into 50 languages that are spoken in 97 countries.

The emergence of youth climate movements since 2018, personified by Greta Thunberg, Isra Hirsi, Helena Gualinga, and Vanessa Nakate, and the student climate strikes that they inspired, is a positive sign that younger generations understand the urgency and seriousness of the climate emergency. The global framework of learning, including primary and secondary schools, should take advantage of this growing awareness among children and support them with education on planetary health. This educational revolution will prepare the next generation for the challenges ahead and nurture them into future agents of change, advocating for a healthier and more sustainable way of life.

DJT is the founder of OneHealthLessons.com. RG is a member of the Editorial Advisory Board of The Lancet Planetary Health and the Next Generation Adviser of The Lancet One Health Commission. All other authors declare no competing interests.

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