Measuring What Really Matters: Education and Large-Scale Assessments in the Time of Climate Crisis

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What matters in education? And how do we measure it? Historically, answers to these questions have been defined by the logic of economic growth associated with a series of industrial revolutions worldwide—from the age of mechanical production in the 18th century, to the age of mass production and science in the 19th century, to the rise of digital technology in the 20th century. Standing on the precipice of what the World Economic Forum, the World Bank, and the Organisation for Economic Co-operation and Development (OECD) herald as the “Fourth Industrial Revolution”—associated with the rise of artificial intelligence, automation, and supercomputing among many other technological inventions—education continues to be envisaged as serving the purpose of economic growth to benefit humans. Large-scale assessments (LSAs) reinforce this logic, “measuring what matters” and thus reinscribing the “natural order” of how education should be organized and administered (see Elmore, 2019; see also Komatsu & Rappleye, 2017). The special issue edited by Professor Yong Zhao, Professor Zhenguo Yuan, and

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Dr. Yurou Wang brings together an impressive group of authors, who collectively argue that both education and LSAs need to be fundamentally reexamined in order “to cultivate human capacities fitting for the future.”

The special issue also problematizes LSAs and their impact on education, primarily by highlighting the limitations of LSAs in meeting the demands of the Fourth Industrial Revolution. The authors of the special issue convincingly argue that what LSAs can measure is limited to a narrow spectrum of what matters to the success of individuals and societies, while failing to measure the broad range of valuable education outcomes and the unique combination of talents, knowledge, skills, and personal qualities of individual human beings. This results in a host of damaging side effects. Several papers in the special issue devote considerable attention to these consequences—ranging from exacerbation of inequity and demoralization of professionals to ethic corruption and stifled creativity—which they refer to as “collateral damage,” “unintended consequences,” “washback effects,” or more mildly “paradoxes” (see Beghetto, 2019; Emler, Zhao, Deng, Yin, & Wang, 2019; Yuan & Zhao, 2019; Zhao, Wehmeyer, Basham, & Hanse, 2019). In this context, the special issue invites a more fundamental rethinking of LSAs that goes beyond the cognitive skills (e.g., literacy and numeracy) in order to measure a broader range of learning capabilities referred to as noncognitive skills or 21st-century skills (e.g., innovations skills, entrepreneurial skills, happiness, physical well-being, self-determination, social–emotional well-being, resilience, grit, communication skills, and collaboration skills; see Rappleye, Komatsu, Uchida, Krys, & Markus, 2019 for a critique of this shift to the noncognitive). In short, the special issue offers a constructive critique of LSAs and calls for alternatives that would allow for the exploration and systematic study of diverse learning environments and divergent approaches to learning.

We welcome such a critical reassessment of LSAs in education, especially the efforts by the special issue editors to refocus conversation on more philosophical issues of education. This effectively helps disrupt the business-as-usual discussions of technical aspects of LSAs. However, we would like to push the discussion further by arguing that there is much more at stake than the demands of the Fourth Industrial Revolution currently facing education. The logic of infinite economic growth, which fuels current discussions about the future of education in the context of yet another iteration of the industrial revolution—and the role that LSAs play in reinforcing this logic—not only narrows the purposes of education to basic cognitive skills but also reinscribes the ideals of human exceptionalism and neoliberal individualism at the expense of broader ecosystem health, ecological integrity, and long-term sustainability. From this perspective, it is more urgent than ever to reframe the discussions about education purposes, as well as rethink the role of international large-scale assessments (ILSAs) that drive these discussions, away from the exclusive focus on economic growth and toward broader planetary challenges we face.
How can this be achieved? In our recent work, we used ILSA data in a way not commonly attempted: to delink education from the logic of efficient economic growth and instead examine the empirical relationship between education and environmental impacts on Earth—a relationship that has been often overlooked because the concerns of scientists and social scientists often appear to be unrelated. By bridging this divide, we gain a very different (and perhaps quite unexpected) picture of education and its impact on environmental sustainability. For example, by examining the relationship between education (i.e., the lower secondary completion rate, basic literacy, and numeracy as measured by OECD’s PISA 2015) and environment (i.e., per capita CO₂ emissions), we can make visible that countries having “better” education tend to have more detrimental impacts on climate change (see Komatsu & Rappleye, 2018; Komatsu, Rappleye, & Silova, in press). We suggest that this is because the dominant education paradigm—one rooted in the “modernist Western paradigm” (Sterling, Dawson, & Warwick, 2018, p. 5)—has consistently prioritized Western education models that focus on economic growth, technocratic determinism, human exceptionalism, and liberal individualism over environmental concerns. Based on the analysis of major policy reports produced by OECD, the World Bank, and UNESCO, we argued that the education paradigm promoted by these major international agencies reflects not only the economic growth logic of these organizations but also the “subjectivity” projects they try to enact globally, for example, a focus on abstract thinking (cognition alone) and the reduction of “society” to an agglomeration of atomized (neo)liberal individuals competing for rapidly shrinking resources on Earth (see Komatsu & Rappleye, 2018; Komatsu et al., in press). We note that this logic is not all that different from Elmore’s contribution in this issue that defines “learning is fundamentally an action requiring the development of human agency and control” (Elmore, 2019, p. 333). Although it might seem self-evident, this is actually a heavily cultural reading of what it means to learn and be—largely derived from Western psychology (for critique see Rappleye et al., 2019). Furthermore, the dominant education paradigm assumes, true to Western enlightenment illusions, that if people are equipped with the skills to reason and the knowledge about the problems they face, they will act to solve the problems. However, our research suggests that knowledge and skills alone are not sufficient to achieve environmental sustainability. Instead, we suggest that culture, which encodes our attitudes and values, strongly affects human impacts on climate.

Shifting attention to culture—and the role of education in cultural formation of societies—we then explore whether individualistic societies (i.e., one whose members predominantly believe in forms of independent self-construal and in which cognitive skills and the sense of agency are valorized) would exhibit a higher environmental impact compared to less individualistic societies (i.e., one where the prevailing belief is in interdependent selfhood). Using three indices comprising country-level data including Hofstede’s “individualism–collectivism” scale, Ecological Footprint of Consumption, and anthropogenic perception of climate change, our findings suggest that
although the independent self has traditionally been a major cornerstone of Western civilization and been valorized in other places worldwide during the modern era, rewriting this culturally derived concept of self might now be necessary to move toward greater environmental sustainability (Komatsu, Rappleye, & Silova, 2019).

What all this empirical work points to is that we must rethink the very foundations of existing forms of education. We believe that some critical distance from Western modes of thinking and education—a particular cultural arrangement, not a universal phenomenon—is a crucial step for locating alternatives beyond the Western education paradigm as we face the climate change catastrophe. While there is some awareness of the importance of non-Western education practices (including indigenous education practices) among some policy stakeholders, major international organizations (e.g., the World Bank and OECD) and many governments are nevertheless seeking to replace remaining elements of indigenous systems in non-Western countries with those based on the current education paradigm, often through the creation of ILSAs and related competency-based curricular changes (Addey, 2017; Auld, Rappleye, & Morris, 2018; Gorur, 2016; Takayama, 2008). In response, we argue that it is important to keep open the space for questioning whether such approaches are conducive to sustainable lifestyles, while considering alternatives beyond the Western horizon that can contribute to the collective effort to fundamentally reimagine education. In short, we propose to initiate a different sort of conversation than the one currently surrounding ILSAs—one that helps education researchers, practitioners, and policy makers alike to imagine something beyond the current education paradigm—and gives the next generation a chance of shifting off our current trajectory of environmental catastrophe. While LSA data itself presents multiple dilemmas, it is the parochial economic and cultural logics underpinning the analysis of this data that is far more problematic. So we wholeheartedly agree that it is time to focus on measuring what really matters in education, but this means moving away from a myopic focus on technology, economic growth, and Western cultural scripts as the standard of the real.

Author contributions

All authors contributed equally to this commentary.

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