

SPECIAL ISSUE
**Learning Assessments for Sustainability? Exploring the Interaction
between Two Global Movements**

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**Introduction to the Special Issue: Learning Assessments for
Sustainability? Exploring the Interaction Between Two
Global Movements**

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Abstract: The aim of this special issue, “Learning Assessments for Sustainability?”, is to examine the interaction between the environmental and sustainability education (ESE) movement and the international large-scale assessments (ILSAs) movement. Both global educational movements emerged in the 1960s and their simultaneous work have affected each other since then. While the

articles in this special issue highlight the potential benefits of ILSAs as a source of data for secondary analysis, they also demonstrate the limitations of ILSAs and their negative consequences to ESE. As such, we call for more research on the interaction between ESE and ILSAs and for a serious consideration of how test-based accountability practices might work against meaningful engagement with ESE. This introductory article includes three sections. The first section provides context about the movements. The second section presents an overview of the articles and alternative ways for reading them. The third section discusses lessons learned from the collection of articles. We conclude with a call for further research and reflection.

Keywords: education for sustainable development; environmental education; globalization; international large-scale assessments; social movements; test-based accountability

Introducción al número especial: ¿Evaluaciones de aprendizaje para la sostenibilidad? Explorando la interacción entre dos movimientos globales

Resumen: El objetivo de este número especial, ¿Evaluaciones de aprendizaje para la sostenibilidad?, es examinar la interacción entre el movimiento de educación ambiental y de sostenibilidad (ESE) y el movimiento de evaluaciones internacionales a gran escala (ILSA). Ambos movimientos educativos globales surgieron en la década de 1960 y su trabajo simultáneo se ha afectado desde entonces. Si bien los artículos de este número especial destacan los beneficios potenciales de las ILSA como fuente de datos para el análisis secundario, también demuestran las limitaciones de las ILSA y sus consecuencias negativas para la ESE. Como tal, pedimos más investigación sobre la interacción entre ESE e ILSA y una consideración seria de cómo las prácticas de accountability basadas en pruebas podrían funcionar en contra de un compromiso significativo con ESE. Este artículo introductorio incluye tres secciones. La primera sección proporciona contexto sobre los movimientos. La segunda sección presenta una descripción general de los artículos y formas alternativas de leerlos. La tercera sección analiza las lecciones aprendidas de la colección de artículos. Concluimos con un llamado a profundizar la investigación y la reflexión.

Palabras clave: educación para el desarrollo sostenible; educación ambiental; globalización; evaluaciones internacionales a gran escala; movimientos sociales; accountability basada en pruebas

Introdução à dossiê especial: Avaliações de aprendizagem para a sustentabilidade? Explorando a interação entre dois movimentos globais

Resumo: O objetivo desta edição especial, Avaliações de Aprendizagem para a Sustentabilidade?, é examinar a interação entre o movimento de educação ambiental e de sustentabilidade (ESE) e o movimento de avaliações internacionais em grande escala (ILSAs). Ambos os movimentos educacionais globais surgiram na década de 1960 e seus trabalhos simultâneos afetaram um ao outro desde então. Enquanto os artigos nesta edição especial destacam os benefícios potenciais dos ILSAs como uma fonte de dados para análise secundária, eles também demonstram as limitações dos ILSAs e suas consequências negativas para o ESE. Como tal, pedimos mais pesquisas sobre a interação entre o ESE e os ILSAs e uma consideração séria de como as práticas de *accountability* baseadas em testes podem funcionar contra um envolvimento significativo com o ESE. Este artigo introdutório inclui três seções. A primeira seção fornece contexto sobre os movimentos. A segunda seção apresenta uma visão geral dos artigos e formas alternativas de lê-los. A terceira seção discute as lições aprendidas com a coleção de artigos. Concluimos com um apelo a novas pesquisas e reflexões.

Palavras-chave: educação para o desenvolvimento sustentável; educação ambiental; globalização; avaliações internacionais em grande escala; movimentos sociais; accountability baseada em teste

Introduction to the Special Issue: Learning Assessments for Sustainability?

The 1960s was a pivotal decade, marked by the rise of various social and scientific movements. “Movements” are collective efforts acting within or outside of institutional channels for the purpose of challenging or defending extant authority (Snow et al., 2004). The social and scientific movements of this decade were consequential to the education sector and formal school systems worldwide. We focus on two such movements: the environmental and sustainability education (ESE) movement, and the large-scale learning assessments movement.

The modern environmental movement began to take form in the 1960s. Although concerns about the protection of nature and the wilderness emerged in the late 19th century, many scholars and activists point to the publication of Rachel Carson's *Silent Spring* in 1962 as a turning point in the history of the global environmental movement (Shabecoff, 1993; for a critical review, see Meyer & Rohlinger, 2012). Over the years, this movement has evolved into what we know as the sustainability movement (Caradonna, 2014), which seeks to improve quality of life while balancing four interdependent pillars: environment, society, culture and economy. The adoption of the United Nations Sustainability Development Goals (SDGs) marks the most recent phase in the institutionalization of the movement.

The ESE movement, which is part of the larger environmental and sustainability movement, promotes not only knowledge transmission (e.g., teaching about environmental challenges and justice) but also awareness, attitudes, motivation, skills, and participation in activities that lead to a more sustainable world (Palmer, 2002; UNESCO/UNEP, 1975, 1977). Over the past two decades, scholars have documented the global spread of ESE in official curriculum, textbooks, schools, and non-formal educational organizations (Benavot, 2004; Bromley et al., 2011; Gan, 2021, Gan et al., 2019; Pizmony-Levy, 2011). The ESE movement gained momentum with the declaration of the United Nations Decade of Education for Sustainable Development (DESD 2005-2014) that sought to mobilize the educational resources of the world to help create a more sustainable future (UN General Assembly, 2002). ESE is now even codified as part of the SDGs, under Target 4.7: “By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development.” At the time we write this editorial, there is no clear consensus on how the international community will measure Target 4.7.

The large-scale learning assessments movement champions the use of test-based accountability and learning outcomes as a fundamental element of the education policy and decision-making process. What started as a comparative research project in the early 1960s is now a robust organizational field that includes routinized international large-scale assessments (ILSAs; Papanastasiou et al., 2011; Pizmony-Levy, 2014). The International Association for the Evaluation of Educational Achievement (IEA), for example, conducts the Trends in International Mathematics and Science Study (TIMSS), the Progress in International Reading Literacy Study (PIRLS), and the International Civic and Citizenship Education Study (ICCS). In addition, the Organization for Economic Co-operation and Development (OECD) conducts the Programme for International Student Assessment (PISA). Sahlberg (2012) argues that ILSAs play an important role in the Global Educational Reform Movement (GERM), which includes five common education policy initiatives: standardization, focus on the “basics” (i.e., literacy, numeracy, and science), search for low-risk ways to reach learning goals, use of corporate management models, and adoption of test-based accountability. Similar to the ESE movement, over the past two decades scholars have documented

the global diffusion of ILSAs as well as regional and national assessments (Kamens & Benavot, 2011; Kamens & McNeely, 2010; Pizmony-Levy, 2013). Scholars also examined the implications of ILSAs to education policymaking, public discourse, and public opinion (Baroutsis & Lingard, 2021; Pizmony-Levy, 2018; Pizmony-Levy & Bjorklund, 2018; Pons, 2017; Takayama, 2008, 2010; Waldow & Steiner-Khamsi, 2019).

The ESE movement and the ILSAs movement do not operate in vacuum. Rather, they work simultaneously and affect each other. Past research on this interaction between the movements is small, but growing. Scholars argue that discourse of achievement and test-based accountability works against the goals of ESE (Gan, 2016; Gruenewald & Manteaw, 2007). For example, Gan (2016) shows how teachers who are motivated by improving student achievement tend to emphasize environmental knowledge and to marginalize environmental activism and citizenship. Sinnes and Eriksen (2016) show the OECD's PISA has created a stronger pressure for educational reforms than the United Nations' DESD. Pizmony-Levy (2019) demonstrates how the ILSAs movement breaks apart the policy script put forward by the ESE movement. More recently, Silova, Rappleye and Komatsu (2019) have pointed to the alarming gap between what ILSAs measure and what we need to know in time of climate crisis.

To contribute to this growing literature, the authors of this special issue of *Education Policy Analysis Archives* (EPAA/AAPE) examine the interaction between the ESE movement and the ILSAs movement. The impetus for this special issue grew from discussions with participants at the Innovations in Global Learning Metrics Symposium at Arizona State University's Mary Lou Fulton Teachers College (December 2018). The main goal of the symposium was "to initiate a focused debate about global learning metrics about how to make them more culturally responsive, pedagogically innovative, contextually relevant for national education stakeholders, while contributing to a deeper understanding of education and sustainability at a global level" (Fischman et al., 2018, p. 1). Indeed, soon after the symposium we released a call for papers seeking manuscripts that engage both global movements:

[...] This could include critical discourse analysis of the extent to which ILSAs (e.g., TIMSS and PISA) engage with sustainability-related topics and skills; secondary analysis of ILSAs data to study students' engagement with sustainability; exploration of the unintended consequences of ILSAs (and test-based accountability more generally) on the ways in which national education systems engage with environmental education; and cross-national analysis of educational achievement/attainment and environmental outcomes.

We actively disseminated the call for papers among groups dedicated to environmental and sustainability education and large-scale assessments (e.g., relevant SIGs at American Educational Research Association [AERA] and Comparative and International Education Society [CIES]). We received 17 abstract proposals, and invited 14 of them for further review. After at least one round of revision, we accepted six articles for publication. Like many other projects, the publication of this Special Issue was delayed due to the COVID-19 global pandemic. We express our gratitude to the authors and the EPAA team for their perseverance and patience throughout the process.

The Articles in this Special Issue

The special issue includes six articles that explore in different ways the interaction between the ESE movement and the ILSAs movement. Taken together, the articles provide a fresh look at the weaknesses and strengths of large-scale assessments in the context of environmental and

sustainability education. This is one of the main contributions of the collection as a whole.

One way to read this collection of articles is by their approach to ILSAs; this is the order in which the articles appear. The first two articles by Chandir & Gorur and Zuzovsky offer a critical analysis of the validity of the survey instruments used in ILSAs. The next three articles by Kessler, Gong & Zheng, and Powers and Pivovarova present secondary analysis of data collected through international large-scale assessments. The number of articles (and submissions) dedicated to secondary analysis reflects a common practice to use data from ILSAs to engage different research questions. The final article by Gan focuses on the consequences and implications of test-based accountability and assessment on schools' engagement with environmental and sustainability education.

Another way to read this collection is by the type assessment. Three articles engage with PISA (Chandir & Gorur, Gong & Zheng, and Powers & Pivovarova). Administrated every three years by the OECD, PISA measures 15-year-olds' ability to use their knowledge and skills to meet real-life challenges. PISA assesses three core subject areas every cycle: mathematics, science, and reading literacy. In each cycle, one of the subject areas is the focal subject or major domain; the other two subject areas are minor domains. In 2006 and 2015, the main domain was science and the survey instrument included a module on sustainability. Zuzovsky's article engages with TIMSS, which measures how well students in fourth and eighth grades have learned the mathematics and science curricula in participating countries. Kessler's article engages with ICCS, which examines the extent to which students in eighth grade are prepared to undertake their roles as citizens. The IEA administers both assessments: TIMSS every four years, and ICCS on a less regular cycle. The dominance of PISA reflects its centrality in the field of comparative and international education (Meyer & Benavot, 2013) and its recent focus on sustainability. The final article by Gan explores the indirect effect of the ILSAs movement and test-based accountability in general on ESE.

The articles in this special issue use a range of research methodologies to explore the interaction between the sustainability movement and the learning assessments movement. The authors have approached their work with quantitative methods (e.g., descriptive statistics of trends overtime, multivariate and multilevel regression models) and qualitative methods (e.g. survey encounters, interviews, and observations). Three papers focus on one context/country; two papers use data from Israel and one paper use data from Australia. The three other papers apply comparative and cross-national analysis for a large number of contexts/countries. Taken together, the articles demonstrate the importance of combining research methodologies to more fully understand the scope of global phenomena.

Lessons Learned

Through systematic data collection in a range of countries/systems, ILSAs offer a unique opportunity to explore how schools and students engage with the ESE movement and with sustainability more broadly. Powers and Pivovarova, for example, use PISA to analyze environmental awareness and pessimism. Their cross-national analysis suggests that students who engage in more intense science activities and report higher self-efficacy in science are more aware of environmental challenge. In turn, they report on a positive correlation between awareness and pessimism. Kessler uses ICCS to examine the extent to which youth are concerned about climate change. Further, she shows how higher levels of concern is associated with civic knowledge and trust in international organizations. Taken together, these two studies suggest that both science education and civic education could play an important role in realizing ESE. In other words, these studies show how ILSAs can inform the work of policymakers and educators.

ILSAs shed light on factors beyond formal schooling that could shape ESE. Gong and Zheng use PISA to explore students' sense of environmental responsibility. Their cross-national analysis suggests that students in countries with a larger ecological footprint feel less responsible for the environment. This pattern points to the importance of social context in promoting ESE. To achieve sustainability and address the climate crisis, we should not only reorient our education systems. Rather, we should rethink broader ideology, culture, norms, and interactions between humans and the planet. That said, it is important to note that the three cross-national studies in this special issue report on relatively small variation between countries (range from 4% to 7%).

Another set of factors that could shape ESE is students' sociodemographic backgrounds. Indeed, the detailed background questionnaire in ILSAs allow scholars to investigate variations across individual and family characteristics. According to Kessler, for example, girls show less concern about climate change. At the same time, Powers and Pivovarova found girls show more environmental awareness and pessimism, while Gong and Zheng found girls show a greater sense of environmental responsibility. Across the three cross-national studies, the authors report on a positive correlation between home resources/possessions and students' engagement with ESE. Students from families with more resources show more concern about climate change, more environmental awareness and pessimism, and a greater sense of environmental responsibility. When measured by family wealth, however, the pattern is reversed, as Gong and Zheng point out.

While ILSAs provide rich datasets that could inform scholarship, policy, and practice, they also suffer from at least four limitations in the context of ESE. First, ILSAs do not measure the complete script of ESE. TIMSS and PISA include measures of knowledge and understanding; PISA and ICCS include measures of awareness and attitudes. ILSAs, however, overlook skills, behaviors and actions. Zuzovsky (current issue) argues that as a result of this architecture no one assessment can provide a full picture of how students engage with ESE. Second, most ILSAs focus on the environmental pillar of ESE and thus overlook other important pillars, including society, culture, and economy. Third, like many other quantitative and standardized instruments, the results of ILSAs are shaped by the ways in which respondents make sense of the questions. Chandir and Gorur provide vivid examples of how 15-year old students in Australia encounter the PISA questions about energy conservation and ethical consumerism. Their analysis put into question the validity of PISA instruments and policy recommendations that derive from the data. Fourth, as contributions by Chandir & Gorur and Zuzovsky reveal, ILSAs are not sensitive enough to the local context in which students engage with ESE. The local context is especially relevant to ESE because of the emphasis on local, place-based pedagogy (Gruenewald & Smith, 2014).

The ILSAs movement and the GERM encouraged countries to design and implement their own large-scale assessment programs (Sahlberg, 2012). This test-based accountability affects schools' engagement with ESE (Gruenewald & Manteaw, 2007). Gan's study of two schools in Israel illuminates this process by asking: How do Israeli elementary school teachers understand ESE's role in fostering citizenship in the context of assessment and accountability? Gan demonstrates how educators' acceptance of test-based accountability results in the narrowing of ESE to environmental knowledge and understanding.

So far, we discussed the implications of the ILSAs movement on the ESE movement. The papers in this special issue, however, point to a more complex interaction between the two movements. The ILSAs movement is responsive to the growing concern about sustainability. Zuzovsky's article, for example, shows the growing number of sustainability-related items that are included in TIMSS (from 13 items in 1995 to 38 items in 2011). Chandir and Gorur's article describes the development of a module on global competency as part of PISA 2018. The sheer fact that PISA 2006 and 2015 included multiple items on sustainability shows the responsiveness of ILSAs to the ESE movement.

Conclusion

This special issue provides a collection of articles that engage the interaction between the ESE movement and the ILSAs movement. One question that emerges from this collective work is whether the ESE movement should develop a dedicated international large-scale assessment? Such an assessment could help the international community hold education systems accountable on their actions towards SDG 4 Quality Education and specifically Target 4.7. Further, this assessment could provide scholars with rich datasets to examine different components in the ESE policy script (e.g., multiple domains [environment, society, culture and economy] and goals [knowledge, awareness, attitudes, motivation, skills, and participation]).

While we recognize the potential benefits of ILSAs as a governing strategy and as a source of data for secondary analysis, the articles in this collection suggest investing in a dedicated international assessment for ESE is not the right direction forward. Test-based accountability and its associated discourse (e.g., ranking tables) can have negative consequences, including narrowing of the curriculum and overemphasizing decontextualized knowledge and practices. Further, some of the articles in this collection suggest the international community put a pause on current large-scale learning assessment projects as they contribute to the marginalization of ESE in schools.

We call for more research on the interaction between the ESE movement and the ILSAs movement. Indeed, this work is beginning to take form. The Monitoring and Evaluation of Climate Change Education Project (MECCE; PI Marcia McKenzie), for example, is analyzing ILSAs (e.g., TIMSS, ICCS, and PISA) to develop new monitoring indicators and datasets. However, this is not enough. One additional direction is to develop a new instrument to inform the improvement of school-level ESE programs. This development work should bring together a diverse set of stakeholders (i.e., students, parents, teachers, scientists, education planners, and international organizations). The instrument should emphasize local and global issues in a holistic and integrative fashion. Another possible direction is to explore how educators respond to different accountability regimes. We envision interviews and focus groups with teachers about reimagining accountability and its impact on engagement with ESE. We also envision a survey experiment using short descriptions of schools and educators (vignettes) to elicit respondents' judgments about these scenarios.

In sum, achieving sustainability – the balance between planet, people, and prosperity – is the most pressing issue facing humanity. Specifically, climate change is one of the greatest existential threats of our time and it has already had observable effects on the environment (IPCC, 2014). Even if conservative scientific projections of climate change are correct, children born this decade will graduate high schools “on a planet warmer, wetter, and more unstable than the one we inhabit today” (Klinenberg et al., 2020, p. 650). If schools are to play an important role in addressing and mitigating the harmful impacts of climate change, we should pay more attention to how test-based accountability practices – such as ILSAs – limit their pedagogical imagination. Time is running out.

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