

Review

Sustainable education and degrowth: international trends

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Abstract

In the twenty-first century, sustainability has become a critical concept in addressing economic, social, and environmental challenges. Within this context, education plays a pivotal role in raising awareness and fostering action toward a more sustainable future. However, mainstream approaches to sustainability have been criticized for perpetuating economic growth paradigms, prompting the need for alternative perspectives. Degrowth, an emerging concept, seeks to redefine sustainability by prioritizing ecological responsibility, social justice, and equity. This study employs a bibliometric analysis of publications indexed in the Web of Science (WoS) database between 2012 and 2025 to examine how sustainability and degrowth intersect within the academic discourse. The findings reveal dominant trends, thematic evolutions, and research gaps in the literature, highlighting the necessity of interdisciplinary approaches to align educational policies with degrowth principles. Moreover, this study underscores the importance of embedding degrowth-oriented values into educational practices to promote a more equitable and ecologically conscious future.

Keywords Sustainability · Education · Degrowth · Bibliometric analysis · Educational Policy

1 Introduction

Sustainability has become a key concept in addressing global economic, environmental, and social challenges in the twenty-first century [1]. Within the field of education, sustainability has increasingly been examined from a broader perspective, emphasizing the critical role of education in fostering a sustainable future for individuals and society. International policy documents on sustainable education provide guidance on how curricula can be structured both theoretically and practically to enhance societal awareness and engagement [2]. However, sustainability has been criticized for being inherently tied to growth-oriented economic paradigms. A primary critique is that the Sustainable Development Goals (SDGs) reinforce these paradigms, which fail to sufficiently address ecological degradation.. Consequently, alternative approaches to sustainability have been developed in response to these concerns.

As an alternative to mainstream sustainability, the degrowth paradigm critiques the limitations of economic growth and instead promotes an approach that prioritizes ecological sustainability and social justice [3, 4]. Degrowth envisions a future in which individuals and societies lead meaningful lives with reduced consumption, fostering equitable and environmentally conscious social structure [5]. Education plays a crucial role in the dissemination and implementation of this approach by encouraging individuals to adopt sustainable lifestyles [6].

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The relationship between sustainable education and degrowth is often implicitly embedded in international policy discussions. Sustainability has become a foundational principle in global education policies, aiming to enhance individuals' awareness of environmental, social, and economic issues. However, it is often criticized for its failure to challenge economic growth paradigms and, instead, for reproducing them [7]. In this context, the degrowth perspective offers an alternative framework by advocating for a departure from growth-oriented economic models. Degrowth redefines sustainability through the lens of social equity, justice, and ecological responsibility, with the potential to transform the content and methods of education policies.

This study aims to contribute to the reconceptualization of sustainable education policies through the degrowth perspective. Although sustainability and degrowth are conceptually linked, they have largely been addressed in isolation within international research. By bridging these two concepts, this study seeks to provide an original contribution to the field. The limited body of research examining the relationship between sustainable education and degrowth highlights the need for further exploration, particularly in integrating these frameworks into future educational policies that are more equitable, environmentally conscious, and inclusive. The study seeks to identify how these concepts are addressed in international literature, which themes dominate the discourse, and where gaps remain. In doing so, this research is expected to offer valuable insights for rethinking sustainable education policies and providing a new perspective for future studies in the field.

1.1 Sustainable education

The concept of sustainable education began to gain prominence with the publication of the Brundtland Report in 1987, which not only defined sustainability but also emphasized the significance of education policies in achieving sustainable development. Subsequent global summits, such as the 1992 Rio Summit and the 2002 Johannesburg Summit, further solidified sustainable education as an integral component of development policies [8]. Research on sustainable education has been framed within the context of transformational learning, exploring how individuals can construct their perceptions of and interactions with the world through a sustainability perspective.

Sustainable education has been defined by UNESCO [9] as a learning process aimed at fostering awareness of environmental, social, and economic sustainability while enhancing individuals' capacity to take action in these areas. This definition underscores that sustainable education is not merely about increasing knowledge but also about equipping individuals with the skills to implement sustainability principles, ultimately contributing to the construction of a sustainable society.

Sustainability is generally examined through three dimensions: environmental, social, and economic [10]. The environmental dimension focuses on increasing ecological awareness and ensuring the responsible use of natural resources. The social dimension addresses concepts such as social justice, inclusivity, and equity, while the economic dimension involves restructuring economic systems to ensure long-term sustainability. However, existing research tends to prioritize the economic aspect of sustainability, often neglecting the necessity of a balanced approach that incorporates all three dimensions. Within the social dimension, concepts such as equality and justice are particularly significant, requiring policies that strengthen social welfare, healthcare, and education [11]. Education plays a fundamental role in fostering sustainability awareness, ensuring the continuity of sustainable practices across generations.

Sustainable education emerges as a critical learning approach that empowers individuals and societies to build a sustainable future. However, the dominant emphasis on the economic aspect of sustainability has led to debates about the paradoxical unsustainability of sustainability itself. Moreover, policy documents on sustainable education often reveal a disconnect between theory and practice. This misalignment highlights the need to reform education policies through the lens of degrowth, ensuring a more holistic and balanced approach to sustainability.

1.2 Degrowth

The concept of degrowth emerged with the publication of the Limits to Growth report in 1972, which examined the environmental constraints of economic growth [12]. However, degrowth gained significant traction in the 2000s as scholars and policymakers increasingly questioned the sustainability of growth-oriented economic models. Latouche (2009) defined degrowth as a civilizational project that transcends the paradigm of economic growth, emphasizing principles such as social solidarity, equitable distribution, relocalization, and environmental responsibility. Similarly, Kallis (2018) explored degrowth as not only an economic transformation but also a broader paradigm shift encompassing social and cultural dimensions.

Degrowth has emerged as an alternative to the economic growth paradigm, advocating for a more just, equitable, and sustainable societal transformation. Latouche (2009) describes degrowth as the deliberate reduction of production and consumption levels in alignment with ecological limits. This definition extends beyond the economic sphere to encompass environmental and social dimensions, encouraging a holistic perspective on sustainability.

As an ecosocial approach, degrowth critiques the economic growth paradigm and seeks solutions to environmental crises [13]. It highlights the importance of social justice, solidarity, and localized economies. Among the various domains where degrowth can be applied, education stands out as one of the most critical. Rather than offering temporary solutions, degrowth aims to facilitate long-term societal transformation, with education serving as a key mechanism for achieving this shift. Therefore, examining the relationship between degrowth and education is essential in fostering a more sustainable and just future.

1.3 Research objective

The primary objective of this study is to conduct a bibliometric analysis of publications on sustainable education and degrowth that have been indexed in the Web of Science (WoS) database from past to present. The study is designed to provide a comprehensive overview by encompassing all relevant works in the field. In line with this objective, the following research questions are explored:

How has the distribution of publications on sustainable education and degrowth evolved over the years?

What is the distribution of these publications across different academic indices?

In which academic disciplines have publications on this topic been conducted?

What research methodologies have been employed in publications on sustainable education and degrowth?

How are publications on sustainable education and degrowth distributed across different countries?

Which Sustainable Development Goals (SDGs) are primarily addressed in the existing literature?

1.4 Methodology

This study employs the bibliometric analysis method to systematically examine the literature and identify trends within the field. Bibliometric analysis is a research approach that systematically evaluates scientific literature based on variables such as publications, citations, keywords, and author collaborations, thereby revealing key insights into the development of a research domain [14]. Through bibliometric analysis, this study identifies prevailing trends, influential works, and prominent scholars in the field. In addition to bibliometric analysis, a qualitative content analysis of the selected articles was conducted to examine their conceptual frameworks, argumentation patterns, and ideological orientations. This complementary approach enabled a deeper understanding of how degrowth and sustainability are framed and interpreted across the literature.

The analysis focuses on international publications related to sustainable education and degrowth. By examining thematic trends, keywords, and research methodologies in the literature, the study aims to uncover relationships between these concepts and provide a structured understanding of their scholarly evolution, as summarized in Table 1.

The data for this study were obtained from the Web of Science (WoS) academic database. During the data collection process, the keywords "sustainability," "degrowth," and "education" were searched across all fields to ensure comprehensive coverage. The selection of the keywords "sustainability," "degrowth," and "education" was made deliberately based on the conceptual boundaries and the specific research focus of the study. The aim was to explore the intersection of these three concepts within academic discourse, rather than conducting a broad systematic review of sustainability or education separately. First, "sustainability" is a core term used consistently across global educational policy documents and literature, especially those aligning with the Sustainable Development Goals. Second, "degrowth" is an emerging but distinctly defined counter-paradigm that critiques the growth-based logic of mainstream sustainability and has its own coherent literature base. Including synonyms or related terms (e.g., "post-growth," "steady-state economy") was considered, but "degrowth" remains the most cited and consolidated term in high-impact publications. Third, "education" was chosen as the focus area to delimit the scope toward the educational implications of sustainability and degrowth, excluding domains like urban planning or economics.

Only open-access articles were included in the analysis to enhance accessibility, transparency, and reproducibility of results. The decision to focus on the 2012–2025 time frame was informed by two key factors. First, the earliest publications linking sustainability, education, and degrowth began to appear in 2012, indicating the conceptual emergence of this intersection in academic literature. Second, degrowth as a scholarly and policy-oriented paradigm gained significant traction only in the mid-2010s, especially after the Paris Agreement (2015) and global attention on post-growth critiques. Therefore, the selected period ensures relevance and reflects the maturation phase of degrowth-related educational research.

To systematically present the study's objectives, the collected data were categorized, and percentage and frequency values were calculated. Additionally, visual representations, such as graphs and charts, were generated to illustrate trends and distributions within the dataset. To enhance validity, we adopted triangulation by analyzing publication metadata through multiple bibliometric indicators and validated the thematic coherence of core keywords and top-cited studies manually.

Table 1 WoS publications overview

| Scale | Subject matter |
|------------------------|----------------|
| Time Period | 2012–2025 |
| Number of Publications | 45 |
| Number of Authors | 119 |

1.5 Findings

The Web of Science (WoS) database includes 45 open-access articles published between 2012 and 2025 on sustainable education and degrowth. The distribution of these articles across different WoS indices is presented in Table 2.

It is observed that most of the studies are indexed in the SSCI (Social Sciences Citation Index). Additionally, a significant portion of the publications appear in multiple indices. The indexing distribution of the studies is detailed in Table 2.

It is observed that most of the studies fall within the fields of Environmental Science and Studies and Green and Sustainable Science and Technology. The limited number of studies in the field of education is also noteworthy. Since these studies are generally interdisciplinary, they are often categorized under multiple subject areas. This distribution across subject areas is detailed in Table 3.

It is observed that the studies have been published since 2012. Notably, there was a steady increase in publications after 2020, reaching a peak before declining again in 2022. Additionally, no publications were recorded in 2017. The temporal distribution of publications is presented in Table 4.

It has been determined that most of the studies are designed based on qualitative research approaches. Among qualitative research methods, critical theoretical analysis, discourse analysis, and ethnographic studies are the most commonly preferred. In quantitative studies, data collected through surveys have been analyzed. In mixed-method research, qualitative methods tend to be more dominant. The distribution of research methods across the reviewed studies is summarized in Table 5.

Table 2 Articles by index distribution

| Wos Index | n |
|--|----|
| Social Sciences Citaiton Index (SSCI) | 31 |
| Science Citation Index Expanded (SCI-Expanded) | 24 |
| Emerging Sources Citation Index (ESCI) | 11 |

Table 3 Publications by category

| WoS Categories (Subject Area) | n |
|--------------------------------------|----|
| Environmental Sciences | 26 |
| Environmental Studies | 24 |
| Green Sustainable Science Technology | 22 |
| Education Educational Research | 6 |
| Economic | 5 |

Table 4 Publications by year

| Publication Year | n |
|------------------|----|
| 2025 | 2 |
| 2024 | 10 |
| 2023 | 6 |
| 2022 | 9 |
| 2021 | 4 |
| 2020 | 7 |
| 2019 | 4 |
| 2018 | 1 |
| 2017 | – |
| 2016 | 1 |
| 2012 | 1 |


Table 5 Publications by research method

| Method | n |
|--------------|----|
| Quantitative | 5 |
| Qualitative | 33 |
| Mixed-method | 7 |

Table 6 Publications by country

| Country | n |
|---------|----|
| Germany | 15 |
| Spain | 6 |
| Sweden | 6 |
| USA | 6 |
| UK | 5 |
| Others | 7 |

Table 7 Sustainable development goals and research distribution

| | Sustainable development goals | n |
|---|--|----|
|  | Climate action | 27 |
|  | Industry innovation and infrastructure | 23 |
|  | Responsible consumption and production | 21 |
|  | Affordable and clean energy | 19 |
|  | Decent work and economic growth | 16 |
|  | Sustainable cities and communities | 8 |
|  | Quality education | 7 |
|  | Life on land | 7 |
|  | Zero hunger | 5 |
|  | Life below water | 5 |
|  | No poverty | 2 |
|  | Reduced inequality | 2 |
|  | Good health and well being | 1 |
|  | Gender equality | 1 |

The majority of the studies are conducted in Germany. While there are also studies from Spain, Sweden, and the United States, research on this topic remains quite limited in other countries. No studies from Turkey were identified in the dataset. The country-wise distribution of the studies is presented in Table 6.

When analyzing the studies in relation to the Sustainable Development Goals (SDGs), it is observed that most publications address multiple SDG areas. There is a significant concentration of research on climate action, industry innovation, responsible production and consumption, renewable and clean energy, and economic growth. However, studies focusing on core degrowth principles such as gender equality, poverty reduction, and well-being remain notably limited. The distribution of SDG-related themes across the reviewed studies is summarized in Table 7.

2 Conclusion and Discussion

In the contemporary era, the increasing frequency of climate crises, natural disasters, and economic challenges has brought greater attention to the concept of sustainability [15, 16]. Particularly following the COVID-19 global pandemic, there has been a notable increase in sustainability-related research [17]. Although the number of studies has declined in the immediate post-pandemic period, the relevance of sustainability has remained significant due to ongoing environmental and economic crises. According to the research findings, publications on sustainable education and degrowth peaked in 2022, likely as a response to the global disruptions caused by the pandemic. Although there was a decrease in the following year, it reached its peak again in 2024.

There is a notable scarcity of studies that jointly examine sustainability, degrowth, and education in the existing literature [7]. The limited number of studies in the field of education is particularly noteworthy. Most studies in this domain focus on environmental science, using degrowth as a central framework. The lack of research on the role of education in advancing degrowth principles represents a significant barrier to the development and implementation of degrowth-oriented policies [18]. To effectively implement degrowth strategies, greater societal awareness is required, necessitating an expansion of educational research in this area.

The first identified study on sustainability and degrowth in the dataset was published in 2012. During this period, degrowth ideology emerged as a framework that prioritizes environmental sustainability by critiquing the limitations of economic growth. However, research on this topic remains limited and has not yet gained substantial academic prominence. The absence of any publications in 2017 indicates the fluctuating academic interest in the concept before it gained global recognition. In subsequent years, a significant increase in publications was observed, aligning with the intensification of environmental crises and heightened emphasis on sustainable development goals. The rise of degrowth within global climate policies and societal transformation movements further explains this trend. Similarly, other fields have experienced a sharp increase in degrowth-related research since 2020, reaching a peak in 2022 [19]. Given that degrowth only started gaining significance in the early twenty-first century, the absence of earlier academic studies is an expected outcome.

Historically, degrowth has struggled to gain traction as an academic concept due to its critique of growth-driven economic systems. However, since the early 2000s, rising environmental concerns, the unsustainability of fossil fuel-based development models, and increasing social inequalities have accelerated the academic growth of the degrowth discourse [3]. To effectively mainstream degrowth, greater academic research and interdisciplinary collaboration are necessary. Although most studies in this field rely on qualitative research methods such as literature reviews and critical analyses, this is expected given the limited availability of quantitative data. However, as research output increases, it is anticipated that more studies using quantitative and mixed methods will emerge.

The geographical distribution of degrowth-related research is another key finding. Most studies originate from Germany, which plays a leading role in environmental sustainability and degrowth discourse. Other notable contributors include Spain, Sweden, the United States, and the United Kingdom [20]. Spain and Sweden are recognized for their solidarity economies and low-carbon lifestyle policies, whereas the U.S. and the U.K. primarily focus on critiques of economic models and environmental justice issues within sustainable development and degrowth discussions [5]. However, the number of studies from other countries remains limited, indicating that research on degrowth and sustainability is still concentrated in specific regions and has not been sufficiently explored across diverse economic, cultural, and political contexts [21]. The lack of research on degrowth in developing countries suggests that the potential for advancing sustainable development strategies in these regions has not been fully realized.

In analyzing these studies within the framework of the Sustainable Development Goals (SDGs), a significant research gap emerges. Substantial research exists on climate change, renewable energy, and environmental sustainability. When compared with broader educational research aligned with the Sustainable Development Goals (SDGs), the field of degrowth-oriented educational scholarship remains limited. For instance, a Web of Science search using the keywords “SDG” AND “education” yielded 8,360 open-access articles and 13,989 total publications (1992–2024), whereas our targeted search on “degrowth” AND “education” AND “sustainability” produced only 46 open-access publications. This gap underscores the need for further research that integrates degrowth principles into educational discourse and policy. The majority of research in this area remains within the

environmental dimension of sustainability, often operating within the paradigm of economic growth. This suggests that sustainability discourse has yet to fully integrate the core principles of degrowth, particularly its critical perspective on growth-driven economic models.

Moreover, studies related to gender equality, poverty reduction, and equitable living conditions—which form the social foundations of degrowth—are scarce. The lack of research on these topics in developing countries raises concerns about significant gaps in understanding and addressing societal transformation processes. These findings underscore the need for an expanded literature on the social dimensions of degrowth. Future studies that examine degrowth from perspectives such as gender equality and poverty alleviation will not only contribute to achieving the Sustainable Development Goals but also promote a more just and equitable global society. Notably, a targeted search in the WoS database using the keywords "gender equality," "poverty reduction," and "equitable living conditions" in combination with "degrowth" or "sustainability" returned no significant results. This lack of findings further illustrates the limited integration of degrowth principles with key social justice themes in current educational and sustainability research.

The reviewed studies strongly support the ideology of degrowth. Frequent references are made to researchers who adopt a degrowth perspective, particularly in the literature review and discussion sections. These studies advocate for degrowth not only in theory but also through practical approaches. Across the studies, discourses that emphasize the need for societal transformation are prevalent. In the study on degrowth technologies, it is emphasized that degrowth is not merely an economic contraction but defines a fundamentally different societal structure [22]. Similarly, in research on sustainability in education, a radical transformation toward a post-capitalist society is proposed, while critiquing the contradiction of universities serving as producers of capitalist labor [23]. Contemporary studies clearly endorse degrowth ideology while also criticizing capitalist growth models, class-based inequalities, and the exploitation of nature [24]. In addition to the bibliometric analysis, a qualitative content analysis of the selected studies was conducted. This analysis involved a close reading of the full texts to identify conceptual perspectives, argumentative structures, and ideological positioning. The findings from this review revealed a clear dominance of views aligned with the degrowth paradigm. Moreover, several studies explicitly highlight the role of education as a key mechanism for promoting and disseminating degrowth-oriented values and practices.

Despite these limitations, awareness of the social dimensions of degrowth has been increasing in recent years. However, the global research agenda needs to be broadened expanded to better integrate the interconnections between environmental sustainability and social equity. This approach would allow degrowth to be examined beyond the constraints of economic growth paradigms, fostering a more inclusive and holistic understanding of sustainability.

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Author contributions GNK—conducted the bibliometric and content analyses, interpreted the findings, and drafted the discussion and conclusion sections. IK- contributed to the development of the conceptual framework, provided key literature support, and critically revised the manuscript for important intellectual content.

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Data availability No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate Not applicable.

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

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Appendix I

See Table 8

Table 8 Overview of key studies addressing degrowth, sustainability, and education in the web of science database

| Article | Author(s) | Year | Keywords |
|--|--|------|---|
| Is Degrowth Education an Alternative in the Minds of Educators in the Face of the Serious Eco-Social Crisis and Global Warming? | Enrique-Javier Díez-Gutiérrez, José Jesús Trujillo Vargaas, Ignacio Perlado-Lamo de Espinosa, Eva Palomo-Cermeño, Luis-Miguel Mateos-Toro, Antonio Pérez-Robles, Luisa-María García-Salas, Kelly Romero Acosta | 2025 | degrowth, climate change, curriculum, teacher training, sustainability |
| Fashion Fictions: student experiences of designing sustainable fashion worlds | Matilda Aspinall, Amy Twigger Holroyd | 2025 | Sustainable fashion, degrowth, education, fashion system, speculative design |
| The beautiful risk of participatory education: An empirical example of teaching strong sustainability | Gabriella Kiss, Alexandra Köves, Gábor Király | 2024 | critical pedagogy, degrowth, participatory education, sustainability education |
| Digital degrowth: toward radically sustainable education technology | Neil Selwyn | 2024 | degrowth, sustainability, digital education, Illich |
| From Pseudo to Genuine Sustainability Education: Ecopedagogy and Degrowth in Business Studies Courses | Helen Kopnina, Timothy Bedford | 2024 | circular economy, degrowth, ecopedagogy, education for sustainable development (ESDG) |
| Educating in and for Degrowth: Training Future Generations to Prevent Environmental Collapse | Enrique-Javier Díez-Gutiérrez, José Jesús Trujillo Vargas, Eva Palomo-Cermeño, Ignacio Perlado-Lamo de Espinosa, Luisa-María García-Salas, Kelly Romero Acosta, Luis-Miguel Mateos-Toro, Antonio Pérez-Robles | 2024 | degrowth, education, climate change, environmental collapse, initial teacher education, education system |
| Re-visioning the GeoCapabilities project through the lens of critical realism with a focus on sustainable global citizenship | John Huckle | 2024 | GeoCapabilities, critical realism, sustainability, global citizenship, powerful knowledge |
| Community perceptions of sustainability: (Re)framing what matters for more just, ethical, and liveable municipalities | Kathryn Riley, Mariia Iakovleva, Erin Dueck, Heather O'Watch, Margot Hurlbert, Candice Minott, Akram Mahani, Tanvir Ahmed, Michaela Lynds | 2024 | sustainability policy making and implementation, municipalities, governmentality, anticolonial praxis, cartographic and diffractive, methodologies, relational assemblage |
| Challenging the growth-prosperity Nexus: Redefining undergraduate economics education for the Anthropocene | Maximilian Tallgauer, Christoph Schank | 2024 | economics education, undergraduate teaching, prosperity, competence development, learning outcomes for undergraduate economics |
| Decrecimiento y agroecología: La experiencia del Movimiento de Trabajadores Rurales Sin Tierra (MST) en campamentos y asentamientos rurales en el Gran São Paulo, Brasil | Aico Nogueira, Marcos Sorrentino, | 2024 | degrowth, agroecology, MST, rural settlements and camps, environmental justice, environmental education |
| Learning ecologies and agentic pedagogies: children meeting the world | Susan Germein, Tessa McGavock | 2024 | posthuman creativity, learning ecologies, natureculture, agentic pedagogy, imaginaries |
| Radicalizing Managers' Climate Education: Getting Beyond the Bull**** Fairy Tale of Eternal Economic Growth | Oliver Laasch | 2024 | climate change, climate mitigation, responsible management education, radicalization, degrowth, paradigm shift |
| Targeting socioeconomic transformations to achieve global sustainability | Teemu Koskimaki | 2023 | Sustainable development, environmental justice, North-South relations, Anthropocene, strong sustainability, degrowth |
| Can Education Outgrow the Rhetoric of 'Development' Embedded in the UN Sustainability Goals? | Ruth Irwin | 2023 | sustainable education, degrowth, climate change, ecologies of knowledge, embodied learning |
| Degrowth and Higher Education: The Training of Future Teachers | Enrique-Javier Díez-Gutiérrez, Eva Palomo-Cermeño | 2023 | |

Table 8 (continued)

| Article | Author(s) | Year | Keywords |
|--|--|------|---|
| Co-operatives for learning in higher education: experiences of undergraduate students from environmental sciences | Marióna Espinet, German Llerena, Laís M. Freire dos Santos, S. Lizette Ramos de Robles, Mariona Massip | 2023 | environmental education, co-operative for learning, non-hegemonic sustainability, higher education, environmental sciences |
| Accounting for Plural Cognitive Framings of Growth and Sustainability: Rethinking Management Education in Latin America | Maria Jose Murcia, Pilar Acosta | 2023 | managerial cognition, sustainability, economic growth, post-growth, Latin America |
| "Economics for Future" from Different Perspectives—Critical Reflections on SDG 8 with a Special Focus on Economic Growth and Some Suggestions for Alternatives Pathways | Andreas Eberth, Christiane Meyer, Lydia Heilen | 2023 | |
| Circular economy, cradle to cradle and zero waste frameworks in teacher education for sustainability | Matthias Kowasch | 2022 | teacher education, sustainability education, fieldtrips, recycling/upcycling, circular economy/cradle to cradle, zero waste |
| Alfabetización ambiental del profesorado de Educación Infantil y Primaria en formación inicial (Environmental literacy of teachers in initial training in Early childhood and Primary Education) | Alicia Guerrero Fernández, Fátima Rodríguez Marín, Emilio Solís Ramírez, Ana Rivero García | 2022 | environmental literacy, preservice teacher, primary education, early childhood education, questionnaire |
| Who cares about gladiators? An elite-sport-based concept of Sustainable Sport | Attila Szathmári, Tamás Kocsis | 2022 | Degrowth, elite sport, leisure sport, strong sustainability, wellbeing |
| Sustainability and Employability in the Time of COVID-19: Youth, Education and Entrepreneurship in EU Countries | Nicu Gavriluta, Silviu-Petru Grecu, Horia Costin Chiriac | 2022 | Sustainability, employability, COVID-19 pandemic, gender, social inequalities, education level |
| La formación universitaria del futuro profesorado: la necesidad de educar en el modelo del decrecimiento (University training for future teachers: the need to educate in the model of degrowth) | Enrique-Javier Díez-Gutiérrez, Eva Palomo-Cermeño | 2022 | degrowth, sustainability, higher education, initial training, educating for degrowth, education for sustainability |
| Tracing sustainable production from a degrowth and localization perspective: A case of 3D printers | Christina Priavolou, Katerina Troullaki, Nikiforos Tsiouris, Chris Giotitsas, Vasilis Kostakis | 2022 | 3D printers, sustainable production, degrowth, localization, life cycle thinking, open source |
| Scientists' warning against the society of waste | Isabel Marín-Beltrán, Federico Demaria, Claudia Ofelio, Luis M. Serra, Antonio Turiel, William J. Ripple, Sharif A. Mukul, Maria Clara Costa | 2022 | natural resources, social metabolism, overconsumption |
| Sustainable lifestyles: towards a relational approach | Jessica Böhm, Zack Walsh, Christine Wamsler | 2022 | systems thinking, eco-justice, relational ontology, paradigms, relationality, inner-outer transformation |
| Exploring posthuman ethics: opening new spaces for postqualitative inquiry within pedagogies of the circular economy | Helen Kopnina | 2022 | circular economy, clothing industry, Cradle to Cradle, degrowth, food industry, greenwashing, posthumanism, postqualitative inquiry, sustainability |
| Does artistic activism change anything? Strategic and transformative effects of arts in anti-coal struggles in Oakland, CA | Teresa Sanz, Beatriz Rodríguez-Labajos | 2021 | artistic activism, socio-spatial transformations, anti-coal movement, environmental justice, social movements, Oakland, CA |
| Fostering Sustainability and Critical Thinking through Debate—A Case Study | Alfonso Rodríguez-Dono, Antoni Hernández-Fernández | 2021 | sustainable development goals, critical thinking, debating, higher education, flipped classroom, jigsaw |
| Evolution and Current Challenges of Sustainable Consumption and Production | Peter Glavic | 2021 | sustainable consumption, sustainable production, evolution, policy, education |

Table 8 (continued)

| Article | Author(s) | Year | Keywords |
|---|--|------|---|
| Assessing knowledge and engagement on sustainable development goals: exploratory research in the agri-food departments of Ibero-American universities | Ana Guerrero, Juan D. Gómez-Quintero | 2021 | SDGs, 2030 Agenda, higher education, agri-food policies, sustainability education, participation |
| Structural Change for a Post-Growth Economy: Investigating the Relationship between Embodied Energy Intensity and Labour Productivity | Lukas Hardt, John Barrett, Peter G. Taylor, Timothy J. Foxon | 2020 | post-growth economics, degrowth, structural change, energy footprint, multiregional input–output databases |
| A tale of three paradigms: Realising the revolutionary potential of ecological economics | Clive L. Spash | 2020 | paradigm shift, economic growth, markets, social ecological economics, steady-state economics, degrowth, post-growth |
| Education for the future? Critical evaluation of education for sustainable development goals | Helen Kopnina | 2020 | education for sustainable development, education for sustainable development goals, environmental education, sustainable development goals |
| Technological Innovations and Degrowth Opportunities From Urban Egypt: Initiating the Discourse | Sherwat E. Ibrahim, Joseph Sarkis | 2020 | technological innovation, degrowth economics, urban management and governance, sustainability, Egypt |
| Cultural Models of Sustainability in a Post-Transitional Society | Lana Peternel, Marija Vukšić | 2020 | Croatia, cultural modal of sustainability, sustainability values, cultural consensus, future orientated societies |
| Finding a New Commons: Architecture's Role in Cultural Sustainability for Japan's Shrinking Regions | Julia Nakanishi, Lola Sheppard, Jane Hutton | 2020 | depopulation, shrinkage, rural landscapes, material culture, adaptive reuse, culture, social design |
| Identifying key issues for university practitioners of garden-based learning in Spain | Marcia Eugenio-Gozalbo, Raquel Pérez-López, Juan-Carlos Tojar-Hurtado | 2020 | Agroecology, degrowth transition, higher education, organic learning gardens, sustainability education |
| A critical framework for interrogating the United Nations Sustainable Development Goals 2030 Agenda in tourism | Karla A. Boluk, Christina T. Cavaliere, Freya Higgins-Desbiolles | 2019 | Sustainable Development Goals (SDGs), critical thinking, gender, indigenous perspectives, degrowth, circular economy, governance, ethical consumption |
| Social-Ecological Transformation and the Necessity of Universal Basic Income | James P. Mulvale | 2019 | none |
| Public Support for Sustainable Welfare Compared: Links between Attitudes towards Climate and Welfare Policies | Martin Fritz, Max Koch | 2019 | climate change, climate policy, social policy, sustainable welfare, attitudes, environmental policy, energy preferences, welfare, eco-social policies, European Social Survey |
| Building new foundations: the future of education from a degrowth perspective | Nadine Kaufmann, Christoph Sanders, Julian Wortmann | 2019 | economic paradigm, imperial modes of living, transformative learning, reflective learning processes, politicization of education, psychological resources |
| The Matrix of Convivial Technology e Assessing technologies for degrowth | Andrea Vetter | 2018 | conviviality, ethics of technology, ethnography, degrowth, open source, Ivan Illich |
| On the possibility of sustainable development with less economic growth: a research note | Angelo Barroso, Cristina Chaves, Francisco Vitorino Martins, Manuel Castelo Branco | 2016 | growth, sustainable development, HDI, model of constant elasticity, degrowth |
| Barrios en transición (Transition Neighborhoods) | Esteban de Manuel Jerez, José María López Medina, Conso González Arriero, Glenda Dimuro, Irene Machuca de la Rosa, Marina Lora Chapela | 2012 | transition neighborhoods, degrowth, social production and habitat management, sustainability |

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