

Review

# Coverage of Disabled People in Environmental-Education-Focused Academic Literature

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**Abstract:** Environmental education (EE) is a lifelong process to acquire knowledge and skills that can influence pro-environmental behavior, environmental activism, and disaster-risk management. Disabled people are impacted by environmental issues, environmental activism, and how EE is taught. Disabled people can be learners within EE but can contribute to EE in many other roles. Given the importance of EE and its potential impact on disabled people—and given that equity, diversity, and inclusion is an ever-increasing policy framework in relation to environment-focused disciplines and programs in academia and other workplaces, which also covers disabled people—we performed a scoping review of academic literature using Scopus and EBSCO-HOST (70 databases) as sources, to investigate how and to what extent disabled people are engaged with EE academic literature. Of the initial 73 sources found, only 27 contained relevant content whereby the content engaged mostly with disabled people as EE learners but rarely with other possible roles. They rarely discussed the EE impact on disabled people, did not engage with EE teaching about disabled people being impacted by environmental issues and discourses, and did not connect EE to environment-related action by disabled people. Results suggest the need for a more differentiated engagement with disabled people in the EE literature.

**Keywords:** environmental education; disabled people; people with disabilities; environmental activism; environmental impact; curriculum design; impact of environmental education



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## 1. Introduction

According to the 1975 *UNESCO Belgrade charter: A framework for environmental education*, the first international document focusing on environmental education (EE),

“The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones”. [1]

The document includes formal and informal settings of learning and education [1], such as formally in schools, classrooms, colleges and universities, and informally through NGOs, businesses, the media and community education [2]. Disabled people encounter many social barriers [3–9], including in all forms of educational settings [7,10–19]. Disabled people are disproportionately impacted by environmental issues, such as those outlined by *The United Nations 2018 Flagship Report on Disability and Development: Realization of the Sustainable Development Goals by, for and with Persons with Disabilities* [20], and environmentalism [21–28].

Environmental education (EE) is said to lead to informed citizenship and environmental literacy, ethical awareness, responsible actions, a more sustainable society [29]; these are

all goals that are also important for disabled people. Furthermore, disabled people can and should participate in and contribute to EE in many roles such as:

- (a) Learners of EE;
- (b) Consumers of EE;
- (c) Therapeutic consumers of EE;
- (d) Knowledge producers for EE information;
- (e) Curriculum content contributors for EE;
- (f) Educators for EE;
- (g) Advocates of EE.

Given the many societal problems disabled people face [4] including the impact of environmental issues and environmental activism on disabled people [20,28], and the impact and premise of EE [1], the objective of our scoping review of academic literature was to answer the following research questions using a directed qualitative content analysis: (1) how, and to what extent, are disabled people covered in relation to EE in academic literature and (2) how, and to what extent, does academic literature engage with the impact of EE on disabled people. For these two questions, we particularly looked at which of the potential roles are evident for disabled people in EE, how disabled people are portrayed, and whether EE literature engages with the impact of environmental activism and environmental issues on disabled people.

We discuss our findings through existing academic and non-academic literature discussing EE and equity/equality, diversity, and inclusion (EDI)—an ever-increasing topic in academia in general [19]—and concerning environment-focused disciplines and programs [30]; we also consider literature concerning the general workforce, and look through the lens of the academic and non-academic literature covering environmental issues and environmental activism related to disabled people.

### 1.1. The Role and Impact of EE

According to the 1975 UNESCO Belgrade charter: *A framework for environmental education*, “Recommendation 96 of the Stockholm Conference on the Human Environment called for the development of environmental education as one of the most critical elements of an all-out attack on the world’s environmental crisis. This new environmental education must be broad based and strongly related to the basic principle outlined in the United Nations Declaration on the New International Economic Order” [1]. Furthermore, the “goal of environmental education is: to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones” [1]. The stated objectives of EE are:

1. “Awareness: to help individuals and social groups acquire an awareness of and sensitivity to the total environment and its allied problems.
2. Knowledge: to help individuals and social groups acquire basic understanding of the total environment, its associated problems and humanity’s critically responsible presence and role in it.
3. Attitude: to help individual and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.
4. Skills: to help individuals and social groups acquire the skills for solving environmental problems.
5. Evaluation ability: to help individuals and social groups evaluate environmental measures and education programs in terms of ecological, political, economic, social, esthetic and educational factors.
6. Participation: to help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems to ensure appropriate action to solve those problems” [1].

The goals and objectives of the Belgrade charter were also reflected in the 1977 Tbilisi Declaration of the first intergovernmental conference on environmental education [31] and are still valid, as evident by their use on the webpage of the USA Environmental Protection Agency [32]. In Canada, the Ontario Ministry of Education set out an EE policy framework with the goal to help students acquire knowledge about their connections to the environment and all living things, increase student involvement with environmental projects, and help system leaders implement evidence-based environmental programming [33]. It is seen as important for EE to increase public awareness and knowledge of environmental issues, teach individuals critical thinking, and enhance individuals' problem-solving and decision-making skills [32]. EE is said to lead to informed citizenship, environmental literacy, ethical awareness, responsible actions, and a more sustainable society [29], whereby "environmental literacy is the idea that a thoughtful and engaged citizen, as an individual and in collaboration with others, makes decisions and takes actions in varied contexts that benefit him or herself, the community, and society, both now and in the future" [34] (pp. 2–5).

EE is valuable to help individuals build the knowledge and skills to take action [35], and EE is linked to environmental activism [36–38] and active citizenship [39–42], both of which also include the arts as a means of achieving their goals [36,40]. It is argued that there is a need to establish an international network of environmental educators and researchers in order to facilitate environmental citizenship and a fair and sustainable society [43], and many national associations exist [44,45].

The process of EE is a lifelong mission [2,46] and occurs in formal and informal settings [1], meaning it "can be taught formally in schools, classrooms, colleges and universities, or it can take place in informal learning contexts through NGOs, businesses, and the media, natural centers, botanic gardens, bird-watching, canoeing, scuba diving and ecotourism" [2].

However, many problems exist for disabled students and other disabled learners [7–9,13–18,47–64], including in relation to citizenship education [65] and that many disabled people feel that they are not seen as citizens [66–71].

Intrinsic in the goal and objective of EE is that people may take on many actions and roles after being involved in/while involved in EE. It is reported that EE impacts the environmental awareness, knowledge, attitudes, skills, and participation of learners [32,72–77]. EE has also been said to be beneficial for disaster management, by helping to develop the awareness and skills necessary to reduce disaster risks [78] and to positively impact pro-environmental behavior [72,74]. For example, researchers from one study found that involving Indigenous youth from the United States in EE had a positive impact on environmental sustainability in their communities [77]. Learners may also use newfound environmental knowledge from EE to educate those around them through knowledge transferability [79–81], which is the dissemination of knowledge [82], or may feel the need to change their behavior through environmentally ethical consumerism/disposal [73,79,83]. They may also use this knowledge to enact environmental activism by lobbying for positive environmental change through various methods, such as protests and political participation [79,80,84]. Environmental activism can also be seen as an opportunity for environmental learning, as some researchers have reported that people involved in environmental activism often work to educate others about environmental issues [80]. Disabled people can also fill and participate in all of these roles and actions.

Many articles engage with the questions of what should be part of EE academic curricula, and which curricula should have EE components; for example, adding local knowledge to EE is seen as important [85], as is the linkage to many academic disciplines such as environmental engineering, science, geography, social sciences [86–88], and undergraduate engineering curricula [89]. Ecological literacy, environmental citizenship, and other cross-disciplinary approaches are employed to enhance EE [34]. The environmental competencies of the intellect-oriented domain ('critical-thinking ability', 'creativity', and 'problem-solving ability'), the personality-oriented domain ('autonomy', 'ability to reflect', and 'environmental sensitivity') and the relationship-oriented domain ('communication ability' and 'ability

to manage conflicts') have been used to shape EE curricula [90]. However, studies reveal that environmental educators feel that EE is not being realized in existing curricula [91].

### 1.2. Equity/Equality, Diversity, and Inclusion in Regards to EE

Equity/Equality, Diversity, and Inclusion (EDI) is an ever-increasing topic in academia in general [19] and in relation to environment-focused disciplines and programs [30], as well as the general workforce. The Ecological Society of America has a section with the mandate to "provide resources and support for all ecologists, regardless of race, sex, physical or mental ability or difference, gender identity or expression, sexual orientation, ethnicity, socio-economic status, culture or subculture, national origin, marital status, parental status, politics, religion, level of education, or age" [92] (p. 1); it describes "initial efforts focused on fostering collaboration, diversity, inclusion, and equity within ESA and in members' workplaces, and strengthening connections between ecologists and communities outside of ESA" [92] (p. 1). As to academic settings, race is particularly covered in relation to EDI and EE [93,94]. It has been outlined that actions are needed in relation to people of color [94], but notes that actions can be and are needed for all EDI groups, including disabled people [19]. It is argued that efforts to increase EDI in academic EE "should supplement ongoing efforts to support the integration of equity, diversity, and inclusion throughout environmental organizations and movements" [94] (p. 32) (see also [95,96]). Furthermore, it is stated that "the more collaborative forms of citizen science can be especially well-suited to advance goals of justice, equity, diversity, and inclusion in projects" [97] (p. 32). "In particular, citizen science has the potential to engage and empower historically marginalized communities to participate in scientific research, thereby democratizing the research process" [97] (p. 32); moreover, "Crucially, opportunities to integrate diverse beliefs, epistemologies, and ideas that have been previously excluded from science will only be realized if diversity, equity, and inclusion are part of the goals in the design and implementation of citizen science" [97] (p. 32).

### 1.3. Disabled People and Environmental Issues and Discourses

Disabled people, including children, are disproportionately impacted by environmental issues and disasters due to the social and environmental barriers they often face [21,24,27,28,98,99]. For example, one article from Peek and Stough [24] narrows in on disabled children and the social vulnerabilities they may face in disasters, finding that disabled children are more likely to live in poorly built homes that may become damaged or collapse due to the poverty their families often experience. Furthermore, in the aftermath of disasters that can result in the loss of schools, disabled youth, who already have difficulties accessing education, may have their educational needs further sidelined [24]. In the United States of America, heatstroke disproportionately affects elderly inner-city residents, especially those who have cognitive difficulties [21], while the U.S.A's response to Hurricane Katrina adversely impacted not only the physical safety of disabled individuals, but their access to evacuation and shelter as well, as only 50% of shelters had plans to accommodate disabled people prior to Hurricane Katrina [27]. Hemingway and Priestley [27] speculate that the disabled being excessively impacted by these natural occurrences is not simply due to physical, sensory, or cognitive limitations, but to the socially created state of disadvantage that they experience.

However, when disabled people are discussed in relation to environmental issues, the impacts of these environmental issues are often medicalized into environmental issues causing or worsening disability, meaning impairment [28,100,101]; this is a dynamic that has been critiqued [100,102,103], as it removes the focus from how disabled people are impacted as members of society by problems including environmental issues [104].

Discourses surrounding environmental activism also impacts disabled people [23]; this is evident in the recent surge of plastic straw bans created to help reduce plastic pollutants [21,26]. Disabled individuals often use straws to assist with drinking, and single-use plastic straws are often preferred as they are more flexible and more sanitary compared

to alternatives such as metal and plastic straws [22] and alternatives to plastic straws are noted as being not safe [26]. Vogelmann [23] examined, in one article, how the purposely disruptive protests from the group Extinction Rebellion, a group that uses non-violent civil disobedience to advocate against environmental degradation [105], are making life much harder for disabled people by creating roadblocks for cars. Vogelmann [23], who works to advocate for disabled individuals and uses a wheelchair, takes a taxi to work, as not all subway stations are accessible to her; this means that the traffic delays caused by the Extinction Rebellion protests cost her money, even though she has no other means of transportation.

These examples show how the individuals involved in environmental discourses may be failing to consider disabled people in their actions and policies and, therefore, why the involvement of disabled people in EE, which can impact environmental activism [72,74], may be important.

To conclude, the literature review indicates that EE is seen as important, and that disabled people are impacted in various ways by environmental issues and environmental discourses. As such this scoping study focuses on the extent of academic research that has been conducted on the role of disabled people within EE and the impact of EE on disabled people.

## 2. Materials and Methods

### 2.1. Study Design

Scoping studies are useful in exposing the reader to what the state of research and current understanding is of a given topic [106,107]. This study employed the following stages for our scoping review: identifying the research questions of the review, identifying applicable databases to search, generating inclusion/exclusion criteria, recording the descriptive quantitative results, selecting literature based on the descriptive quantitative results for content-coding of qualitative data, and reporting the findings of the qualitative analysis [108]. We asked two research questions: (1) how, and to what extent, are disabled people covered in relation to EE in academic literature in general; and (2) how and to what extent does academic literature engage with the impact of EE on disabled people in particular? For these two questions, we particularly looked at which of the potential roles are evident for disabled people in EE, how disabled people are portrayed, and whether EE literature engages with the impact of environmental activism and environmental issues on disabled people.

### 2.2. Data Sources and Data Collection

To set boundaries in obtaining data for the scoping review [109] we searched on 23 April 2020 (60 hits), and again 12 January 2022 for 2020–2022 (13 additional hits), two academic databases with no time restrictions; these databases were EBSCO-HOST (a database that includes over 70 other databases itself, including Anthropology Plus, GeoRef, GreenFILE covering human impact to the environment, Environment Complete, and Education Research Complete) and Scopus (containing also all Medline database articles). The two databases contain journals that cover a wide range of topics around EE, as well as many journals on EE such as the *Journal of Environmental Education* and *Environmental Education Research*.

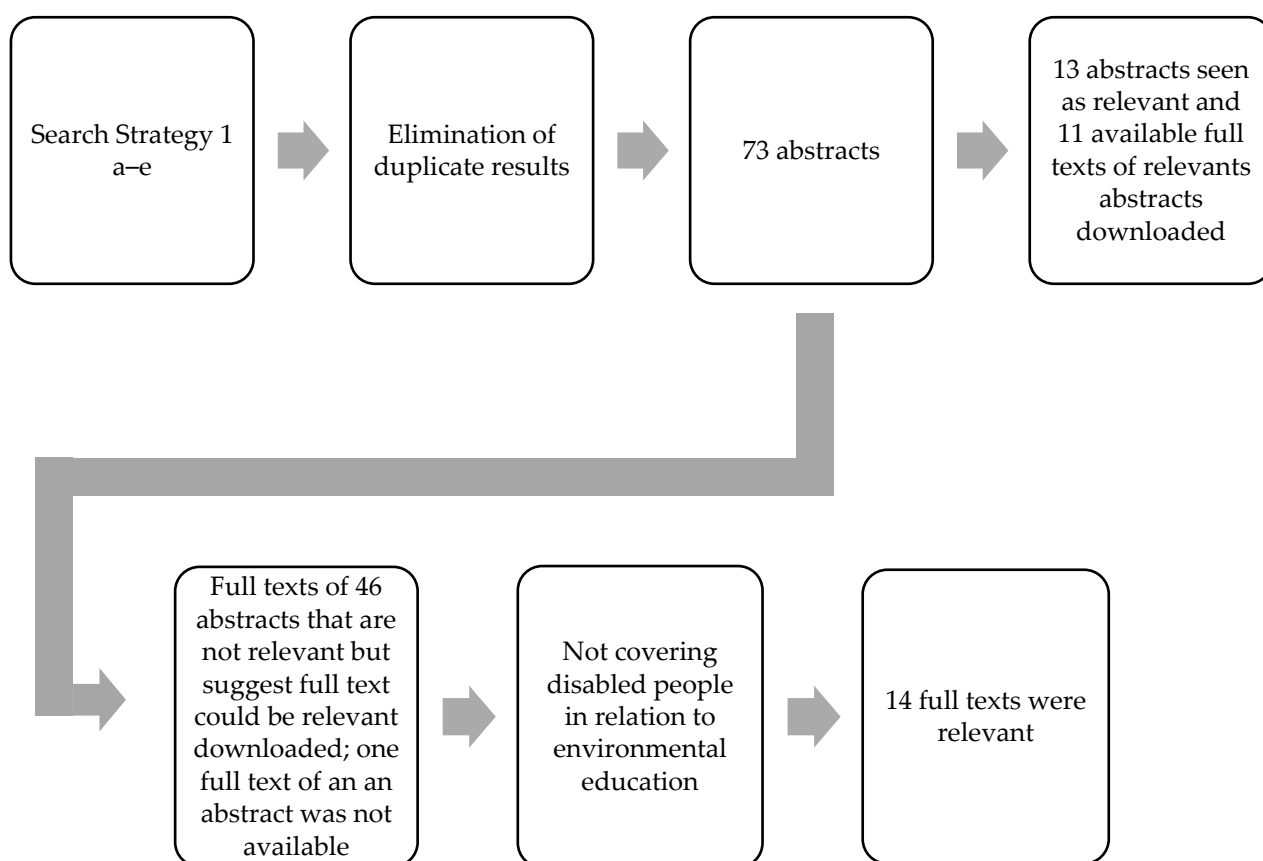
As to inclusion criteria searches were conducted within scholarly peer-reviewed journals in EBSCO-HOST, and within reviews and peer-reviewed articles, conference papers, and editorials in Scopus. The following search strategies were performed. The first search looked for content with “environmental education” co-occurring with disability terms in the abstract. However, given a return of fewer than 10 hits, we modified the search to have “environmental education” within the abstract and any of the disability terms in the full text (Table 1).

**Table 1.** Search strategies used.

Strategy	Sources Used	Search Terms Used
Strategy 1a	EBSCO and Scopus	ABS("environmental education") AND Full TEXT ("disabled people" OR "people with a disability" OR "deaf people" OR "blind people" OR "people with disabilities" OR "people with a learning disability" OR "people with a physical disability" OR "people with a hearing impairment" OR "people with a visual impairment" OR "people with a mental disability" OR "people with a mental health" OR "learning disability people" OR "physical disability people" OR "physically disabled people" OR "hearing impaired people" OR "visually impaired people" OR "mental disability people" OR "mental health people" OR "autism people" OR "autistic people" OR "people with autism" OR "ADHD people" OR "people with ADHD" OR "people with ASD" OR "people with a mental health" OR "people with a mental disability" OR "people with mental disabilities" OR "mental health people" OR "mental disability people" OR "mentally disabled people" OR "disabled person" OR "person with a disability" OR "deaf person" OR "blind person" OR "person with disabilities" OR "person with a learning disability" OR "person with a physical disability" OR "person with a hearing impairment" OR "person with a visual impairment" OR "person with a mental disability" OR "person with a mental health" OR "learning disability person" OR "physical disability person" OR "physically disabled person" OR "hearing impaired person" OR "visually impaired person" OR "mental disability person" OR "mental health person" OR "autism person" OR "autistic person" OR "person with autism" OR "ADHD person" OR "person with ADHD" OR "person with a mental health" OR "person with a mental disability" OR "mentally disabled person" OR "person with ASD")
Strategy 1b	EBSCO and Scopus	ABS("environmental education") AND Full Text("disabled young people" OR "deaf young people" OR "blind young people" OR "learning disability young people" OR "physical disability young people" OR "physically disabled young people" OR "hearing impaired young people" OR "visually impaired young people" OR "mental disability young people" OR "mental health young people" OR "autism young people" OR "autistic young people" OR "ADHD young people" OR "mental disability young people" OR "mentally disabled young people" OR "disabled young person" OR "deaf young person" OR "blind young person" OR "learning disability young person" OR "physical disability young person" OR "physically disabled young person" OR "hearing impaired person" OR "visually impaired young person" OR "mental disability young person" OR "mental health young person" OR "autism young person" OR "autistic young person" OR "person with autism" OR "ADHD young person" OR "person with ADHD" OR "mentally disabled young person" OR "ASD young person")
Strategy 1c	EBSCO and SCOPUS	ABS("environmental education") AND Full Text("disabled student*" OR "student* with a disability" OR "deaf student*" OR "blind student*" OR "student* with disabilities" OR "student* with a learning disability" OR "student* with a physical disability" OR "student* with a hearing impairment" OR "student* with a visual impairment" OR "student* with a mental disability" OR "student* with a mental health" OR "learning disability student*" OR "physical disability student*" OR "physically disabled student*" OR "hearing impaired student*" OR "visually impaired student*" OR "mental disability student*" OR "mental health student*" OR "autism student*" OR "autistic student*" OR "student* with autism" OR "ADHD student*" OR "student* with ADHD" OR "student* with ASD")
Strategy 1d	EBSCO and SCOPUS	ABS("environmental education") AND Full Text("disabled child*" OR "child* with a disability" OR "deaf child*" OR "blind child*" OR "child* with disabilities" OR "child* with a learning disability" OR "child* with a physical disability" OR "child* with a hearing impairment" OR "child* with a visual impairment" OR "child* with a mental disability" OR "child* with a mental health" OR "learning disability child*" OR "physical disability child*" OR "physically disabled child*" OR "hearing impaired child*" OR "visually impaired child*" OR "mental disability child*" OR "mental health child*" OR "autism child*" OR "autistic child*" OR "child* with autism" OR "ADHD child*" OR "child* with ADHD" OR "mentally disabled child*" OR "child* with ASD")
Strategy 1e	EBSCO and Scopus	ABS("environmental education") AND Full Text("disabled youth" OR "youth with a disability" OR "deaf youth" OR "blind youth" OR "youth with disabilities" OR "youth with a learning disability" OR "youth with a physical disability" OR "youth with a hearing impairment" OR "youth with a visual impairment" OR "youth with a mental disability" OR "youth with a mental health" OR "learning disability youth" OR "physical disability youth" OR "physically disabled youth" OR "hearing impaired youth" OR "visually impaired youth" OR "mental disability youth" OR "mental health youth" OR "autism youth" OR "autistic youth" OR "youth with autism" OR "ADHD youth" OR "youth with ADHD" OR "mental disability youth" OR "mentally disabled youth" OR "mentally disabled youth" OR "youth with ASD")

### 2.3. Data Analysis

To answer our research questions we first generated hit counts for the search term combinations (Table 1) [110,111]. Then, we performed a directed qualitative content analysis in two stages to add needed knowledge to the topic investigated [111]. For the first analysis step, the 73 abstracts from search strategies 1a–e, were downloaded from the online sources and uploaded into the qualitative analysis software ATLAS.Ti 8™ for directed qualitative content analysis [111–113]. For the second analysis step, we obtained all the full texts available from abstracts seen as relevant (11 out of 13 were available for download) and the full texts from the 47 abstracts that could contain relevant content judged by the wording of the abstracts even though the abstracts themselves did not show relevant content (46, as in one case, no full text was available for download). All of the full texts were uploaded into the qualitative analysis software ATLAS.Ti 8™. In a third step we evaluated which of the 46 downloaded full texts of the articles where the abstract did not contain relevant content were relevant (14 had relevant content). In the fourth step, all of the relevant content was analyzed; this included 13 abstracts and 25 full texts (11 from the relevant abstracts and 14 from the irrelevant abstracts), totalling 27 sources (two sources only having a relevant abstract available, 11 sources having a relevant abstract and full text available, and 14 sources having only relevant full texts and no relevant abstracts) (Figure 1). For the coding procedure both authors read the content of all articles and abstracts and identified relevant data [113]. Themes related to the research questions were then independently identified in the relevant data by both authors and categorized [111,114].



**Figure 1.** Flow chart of the selection of academic abstracts and full texts for qualitative analysis.

### 2.4. Trustworthiness Measures

Trustworthiness measures include confirmability, credibility, dependability, and transferability [115–117]. Both authors engaged in peer debriefing resolving the few differences in codes and theme suggestions of the qualitative data between the authors [116]. Confirma-

bility is evident in the audit trail, made possible by using the Memo and coding functions within ATLAS.Ti 8™ software. As for transferability, the description of our method gives all the required information to others so they may decide whether they want to apply our keyword searches to other data sources such as grey literature, literature in other languages, and other academic literature, or whether they want to perform more in-depth research.

### 2.5. Limitations

The search was limited to two academic databases. As such, the findings are not to be generalized to all academic literature, non-academic literature, or non-English literature. In addition, we only used the phrase “environmental education” in our search. We did not use other terms such as “environmental learning” as we wanted to focus on the very phrase “environmental education”. As such, there may be articles that have content around disabled people and EE that do not use the term “environmental education”. Our findings, however, allow for conclusions for the data obtained.

## 3. Results

There were 13 sources in which the abstracts were already deemed relevant, and 14 more sources were found relevant based on the rest of the article linking disabled people to EE. All 13 relevant abstracts were published in different years with the exception of 2021: 1994, 1995, 1996, 1981, 2000, 2003, 2006, 2011, 2012, 2014, 2017, and two in 2021. Four abstracts had authors based in the United States, three were based in Greece, one in Australia, and one each in Thailand, Finland, Germany, Slovakia and the United Kingdom. Of the 14 relevant full texts obtained from the non-relevant abstract, there were 12 articles, 1 book, and 1 resource list. One article was published in 2021, two in 2020, two in 2018, and one each in 2017, 2015, 2014, 2012, 2010, 1996, and 1994, while the book was published in 2010 and the resource list in 2008. As to the authors of the fourteen full texts, five authors were based in the United States, two in Greece, one in Portugal, two in Australia, one in the United Kingdom, and one in Poland, Brazil and Thailand. The authors of the book were based in the United States and, while the authors of the resource list were not specified, the publisher was based in the United States.

### 3.1. Results Covering Disabled People in Relation to EE Based on Academic Abstracts Deemed Relevant

To first show a table to summarize the results (Table 2).

**Table 2.** Frequency of themes related to disabled individuals and EE within downloaded relevant abstracts and downloaded full texts of these relevant abstracts.

Sources That Engaged with Disabled People	Sources Where Disabled People Were Referred to as Learners of EE	Sources Where Disabled People Were Referred to as Consumers of EE	Sources Where Disabled People Were Referred to as Therapeutic Consumers of EE	Sources Where Disabled People Were Referred to as Knowledge Producers for EE Information	Sources Where Disabled People Were Referred to as Curriculum Developers for EE	Sources Where Disabled People Were Referred to as Educators for EE	Sources Where Disabled People Were Referred to as Advocates of EE	Sources Where Disabled People Were Mentioned in Relation to EE But Their Role Was Not Specified	Sources Where the Impact of EE on Disabled People Was Mentioned	Sources Covering the Impact of EE on Disabled People or EE Teaching about the Impact of Environmental Activism, or Environmental Issues on Disabled People
13 abstracts	11	0	0	2	0	0	0	0	2	0
11 available full texts of the 13 abstracts	12	0	0	2	0	0	0	0	7	0

### 3.1.1. Results of Content Covering Disabled People in Relation to EE in Academic Abstracts Deemed Relevant

Of the 73 downloaded abstracts obtained through strategy 1a–e, only 13 were relevant. An abstract was deemed relevant when it mentioned disabled individuals in relation to EE. Within the 13 relevant abstracts, the following terms used were to refer to disabled individuals: disability (seven abstracts), disabled (six abstracts), impaired (two abstracts), disabled people (two abstracts), children with cognitive limitations (one abstract) and people with learning difficulties (one abstract).

Linkage in the 13 abstracts between disabled people and EE was made through outdoor education programs (two abstracts) [118,119], EE through outdoor activities (one abstract) [120], in-school EE (two abstracts) [121,122], outdoor EE in conjunction with school (one abstract) [123], EE facilitated through or alongside technology (one abstract) [124], EE facilitated by art (one abstract) [125], EE through gardening programs (one abstract) [126], and disabled individuals as research subjects for EE related research (one abstract) [127], while the rest referred to unspecified EE (three abstracts) [128–130].

Within the mentions of disabled people linked to EE, 11 abstracts framed disabled individuals as learners or potential learners [118–126,128,129]. One abstract referred to disabled people as knowledge producers by involving them as research subjects concerning a nature interest scale, a scale seen as important for EE [127]; and one abstract noted that disabled people, among other marginalized groups, have been neglected in EE, but that they can contribute to EE as knowledge producers and benefit from EE [130]. Eleven abstracts discussed accessibility and inclusion for disabled people within EE [118–126,128–130]. For example, authors from one academic abstract about environmental and outdoor education only discussed disabled people in relation to their impact on non-disabled students when learning EE concepts, and found that the inclusion of developmentally disabled students was not detrimental to the learning of non-disabled students [118]. Another abstract studied the inclusion of disabled students in residential outdoor EE centers that openly advertised their centers' accessibility [119]. Three of the thirteen abstracts focused on adapted EE for disabled people; two of these abstracts mentioned adapted EE for disabled students [121,129], while the third abstract discussed designing tactile maps for children with visual impairments [128]. One abstract investigated the beliefs of special education teachers regarding the feasibility and benefits of teaching EE to disabled students [122]. This abstract was also considered to examine the impact of EE on disabled people, as they mentioned special education teachers discussing the benefits of EE [122], alongside an abstract that also noted that disabled people could benefit from EE [130]. In addition, no abstract discussed the impact of EE on disabled people or of EE teaching on the topic of environmental activism; moreover, no abstract mentioned environmental issues impacting disabled people, or disabled people being involved in environmental activism.

### 3.1.2. Results of Content Covering Disabled People in Relation to EE in the Full Texts Obtained from Academic Abstracts Deemed Relevant

Available full texts were also downloaded from the 13 relevant abstracts to explore whether the full text of an article linked to a given abstract has relevant themes that are not already mentioned in that given abstract; this resulted in 11 additional texts surrounding disabled people involved in EE. Within the 11 full texts the terms used to depict disabled individuals were: exceptional (one full text), handicap (one full text), learning disabled/disability (one full text), blind (two full texts), impaired (two full texts), disabled (four full texts), and disability (seven full texts).

Exploring these full texts from the relevant abstracts also revealed that six full texts mentioned themes not evident in the abstract of that given article.

One full text refers to disabled people as learners within the full text, noting:

“People with disabilities need to be able to access environmental education activities as part of their education, and people without disabilities need to better

understand the barriers faced by people with disabilities and other forms of discrimination and work to enrich their experiences”. [130] (p. 17).

Five full texts explored the impact of EE on disabled people, one an adapted model of EE for disabled students inspiring pro-environmental behavior [121]: one noted how gardening in training programs can “create a more meaningful life for disabled people” where they could “develop individual initiative and enterprise” [126]; one mentioned that a tactile map could help teach a blind child “how and why to use a map, to develop spatial and environmental awareness and as an aid towards future independence” [128]; one noted how, after a park and fifth-grade class partnership, “exceptional children had developed into strong leaders in their respective groups” [123]; and one stated that understanding the human–nature connection, a factor considered important for EE, “can improve nature connectedness” for young students and/or students with learning disabilities [127].

### 3.2. Results Covering Disabled People in Relation to EE in Relevant Academic Full Texts Obtained from Irrelevant Abstracts

To first show a table that summarizes the results (Table 3).

**Table 3.** Frequency of themes of disabled individuals mentioned in relation to EE within full texts of irrelevant abstracts.

Full Texts That Engaged with Disabled People	Full Texts Where Disabled People Were Referred to as Learners of EE	Full Texts Where Disabled People Were Referred to as Consumers of EE	Full Texts Where Disabled People Were Referred to as Therapeutic Consumers of EE	Full Texts Where Disabled People Were Referred to as Knowledge Producers for EE Information	Full Texts Where Disabled People Were Referred to as Curriculum Developers for EE	Full Texts Where Disabled People Were Referred to as Educators for EE	Full Texts Where Disabled People Were Referred to as Advocates of EE	Full Texts Where Disabled People Were Mentioned in Relation to EE, but Their Role Was Not Specified	Full Texts Where the Impact of EE on Disabled People Was Mentioned	Full Texts Covering the Impact of EE on Disabled People or EE Teaching about the Impact of Environmental Activism, or Environmental Issues on Disabled People
14 relevant full texts (from the 47 irrelevant abstracts)	10	0	1	1	0	0	0	1	2	1

46 full texts from the 47 academic abstracts deemed irrelevant by themselves were downloaded due to their potential relevance to disabled people and EE based on the abstracts, although the abstracts themselves were not judged to be relevant. Of the 46 full texts obtained from the 47 abstracts (one was not accessible), only 14 were relevant. Mentions of disabled individuals in the downloaded full texts were considered relevant and counted when disabled individuals were linked to EE. Within the 14 full texts with relevant content, the terms used to depict a disabled individual were: ADHD (one full text), blind (one full text), deaf (three full texts), disabled individuals (one full text), people with medical needs (one full text), people with disabilities (one full text), individuals with disabilities, medical or hospital needs (one full text), special needs (one full text) and disability\* (11 full texts).

In 12 of the 46 downloaded full texts that had relevant content, full texts discussed EE being facilitated through school (five full texts) [131–135], natural outdoor areas/activities/parks (two full texts) [136,137], outdoor fieldwork in higher education (two full text) [138], children’s environmental literature (one full text) [139], community gardens (one full text) [140], EE programs (one full text) [141], and in-school garden programs (one full text) [142].

Within 12 full texts where disabled people were linked to EE, eight full texts referred to disabled people as learners within EE [131–135,137,138,141,142]. An additional text referred to disabled individuals as therapeutic learners by mentioning how access to natural outdoor areas may improve ADHD symptoms [136].

Nine full texts referred to accessibility and inclusion for disabled people within EE. Of these nine full texts, one text referred to access to natural outdoor areas for youth with

ADHD [136], one text mentioned accessible playgrounds [137], one text discussed concerns surrounding accommodating disabled students in outdoor education programs [133], one text mentioned from an oceanic organization presenting statistics showing that few disabled people pursue careers in science and engineering [132], one text profiled a park partnership with schools to adapt EE materials for disabled people [131], one text described including disabled children in early childhood EE [141], one text stated the number of disabled people included in an in-school garden program [142], one text mentioned the percentage of disabled people at a sustainability-focused school [134], and one text mentioned the adoption of inclusive practices to make EE more accessible to disabled people [138]. Two of the full texts simply stated the presence of disabled individuals within EE, but did not mention them any further in the paper [134,142]. There was only one full text where disabled people were mentioned concerning the governance of EE, where Osler [139] examined how disabled people were looked at to guide disability representation in Kenya's environmentally themed *Pied Crow Magazine*, in an issue that discussed people with disabilities.

There were two downloaded full texts covering the impact of EE on disabled people. One text mentioned access and exposure to the natural areas improving ADHD symptoms [136] and one text discussed the improved academic success of Deaf children in EE when it took place outdoors [135]. The results that have yet to be mentioned discussed a community garden placed near a center for Deaf children (one text) [140], where the role of disabled people was not specified. No full texts discussed the impact of EE on disabled people or EE teaching on the topic of environmental activism, or environmental issues impacting disabled people.

Within the two full texts did not explicitly state how EE could be facilitated or implicate a role for disabled people within EE, one full text mentioned, in a sentence, that teachers have to be taught about disability, which could be suggested to mean that disabled people could be knowledge producers for EE; however, who is to teach the teachers is not spelt out explicitly [143]. The other full text mentioned regulations around plastic straws, noting how many regulation documents cover "environmental education". The same document highlights that many disabled people have a need for plastic straws. The article states that environmental regulations can be useful for disabled people and for EE [144] but does not make the linkage that EE should teach about the issue of straws for disabled people, meaning it does not fit our pre-determined roles for disabled people within EE. However, if EE teaches about straw regulations, which are considered as part of environmental regulations, how—and whether—they teach about disabled people and straws might have an impact on disabled people; thus, this could potentially fit under EE impacting disabled people.

#### 4. Discussion

Our findings reveal that disabled people were only linked to EE in 27 sources. The EE literature most often engaged with disabled people as EE learners (11 out of 13 relevant abstracts, 12 out of the full texts of the relevant 13 abstracts, and 10 out of 14 relevant full texts from the irrelevant abstracts). One full text covered the role of disabled people as therapeutic consumers of EE, three full texts noted disabled people as knowledge producers for EE, and one full text did not specify the role of disabled people concerning EE. Nine full texts discussed the impact of EE on disabled people. No abstract or full text engaged with EE covering the topic of disabled people being impacted by environmental issues and environmental activism; moreover, no abstract or full text covered environment-related action by disabled people. We discuss our findings in the remainder of the section through the lens of: the potential roles of disabled people in EE; the purpose of EE including equity, diversity, and inclusion—an ever-increasing policy framework in relation to environment-focused disciplines and programs in academia and other workplaces—which also covers disabled people and the impact of EE; environmental activism; and environmental issues for disabled people.

#### 4.1. EE: The Role of Disabled People

According to the Belgrade charter: A framework for environmental education, the guiding Principles of EE are:

1. environmental education should consider the environment in its totality—natural and man-made, ecological, political, economic, technological, social, legislative, cultural and esthetic.
2. environmental education should be a continuous life-long process, both in-school and out-of-school.
3. environmental education should be interdisciplinary in its approach.
4. environmental education should emphasize active participation in preventing and solving environmental problems.
5. environmental education should examine major environmental issues from a world point of view while paying due regard to regional differences.
6. environmental education should focus on, current and future environmental situations.
7. environmental education should examine all development and growth from an environmental perspective.
8. environmental education should promote the value and necessity of local, national and international cooperation in the solution of environmental problems” [1].

Given these principles, disabled people could be engaged with EE in many roles. Of the potential roles we found the following in our data:

- (a) As potential learners in EE (11 out of 13 abstracts, 12 out of 13 full texts from relevant abstracts, and 10 out of 14 full texts from irrelevant abstracts);
- (b) As potential consumers of EE (none);
- (c) As potential therapeutic learners of EE (one full text);
- (d) As potential knowledge producers for EE information (two abstracts and one full text);
- (e) As potential curriculum developers for EE (none);
- (f) As potential educators for EE (none);
- (g) As potential advocates of EE (none).

Role theory “explains roles by presuming that persons are members of social positions and hold expectations for their behaviors and those of other persons” [145] (p. 67). Therefore, how one is portrayed influences the role one acts out in the world [145,146], making it important to recognize that the current representation of disabled people may be impacting the role they feel they play in society.

In our review, we mostly found content engaging with role a, which was the role of participation within EE in a learning capacity, whereby the main focus was the problem of accessibility and inclusion for disabled learners within EE. The coverage of accessibility fits with how EE associations cover disabled people. In a text centered upon guidelines for community engagement from the North American Association for Environmental Education, the accessibility of EE for disabled people is discussed with real-life examples of inclusion, and it is suggested that the accessibility of environmental programs may be increased by consulting directly with disabled people or those “familiar with those needs” [44] (p. 91). In a report on EE from the National Environmental Education Foundation, it is argued that environmental educators should make an effort to “develop a better understanding of how different audiences (reflecting a diversity of gender, race, ethnicity, culture, socio-economic status, and disabilities) think about and use natural areas and how to increase access to nature for all Americans” [147] (p. 58).

However, more issues could have been covered under role a besides accessibility and inclusion. We found two articles fitting role a that did not focus on accessibility; one covered special education teachers and their opinions regarding the feasibility and benefits of EE for disabled students [122], and another examined the impact of disabled students participating in integrated EE on non-disabled students [118]. These mentions are problematic, as they prioritize the experiences of non-disabled individuals when discussing disabled individuals in EE. One might have expected role a to include the voices and

experiences of disabled individuals when investigating disabled people as learners within EE, yet no articles or abstracts in our scoping review included contributions from disabled people. By involving disabled people in EE literature, the contribution of their experiences could allow for the improvement of EE [148]; this representation, following the framework of role theory [145], may allow disabled people to see themselves in research roles and therefore encourage their participation in these roles. Role a could have also examined disabled people learning EE for disaster prevention, as it has been noted that EE and disaster management education has been valuable for disaster preparedness [78], and that disabled individuals are often adversely affected by environmental events [21,22,24,27]. As it is known that EE has been noted to positively impact valuable pro-environmental behavior as well [83], and that learners may share their newfound environmental knowledge and enact environmental activism after EE [72,74,79,80,84], role a could also have investigated these findings amongst disabled people. Role a could also have explored some of the barriers faced by disabled individuals in accessing EE, as it has been noted by academic literature not found in our scoping review that disabled people are often excluded from disaster planning [24]. Academic literature could have engaged with these angles of investigation much more.

Role b, the role that examined disabled people as consumers of EE, was not engaged within our downloaded content. Role b could have included disabled people utilizing EE courses, environmental literature, and various other EE resources. This lack of coverage within academic literature is problematic, as environmental knowledge is important to help people become engaged in real-world issues such as sustainability and the conservation of natural resources [35]. For example, one researcher examined teachers engaging in an EE Master's program and found that over 70% of surveyed graduates had taken on leadership positions to advance EE after this Master's program [81]. This shows that individuals have the potential to affect change after engaging with role b through knowledge transferability and, given the importance of environmental knowledge, academic literature should have engaged with disabled people and role b much more.

Only two articles reflected an engagement with roles c and d, and none with roles e-g. Role c, which represented disabled people as therapeutic learners of EE, was evident through one text, which noted how exposure to the outdoors within the community and school environment of youth with ADHD may reduce ADHD symptoms and improve motor skills [136]. Role d, disabled people as knowledge producers for EE, was evident in one article that focused on the input of disabled people in disability representation within an environmentally focused children's magazine [139]. One should have, and could have, expected many more studies covering role d and e-g, which represented disabled people as curriculum developers, educators, and advocates for EE. The North American Association for Environmental Education [44] noted that they seek the input of disabled people to develop accessibility in EE; this statement could have led to numerous academic studies on how to do so, to question the focus on accessibility and what it entails, such as physical or emotional accessibility. Furthermore, role c's focus on medical improvement as a result of EE is problematic. Medicalized coverage, as seen in [136], perpetuates a harmful narrative that disabled people should only engage in activities that may "fix" their medical impairments, as opposed to examining how EE may be beneficial to them as citizens [104]. However, this finding fits with other literature that questions the medical focus of environmental discourses and the disabling actions of environmental movements [100,102,103].

In a manual for participation, Driskell states that "one of the most effective strategies for creating better cities is through the actual process of participation: helping young people to listen to one another, to respect differences of opinion, and to find common ground; developing their capacities for critical thinking, evaluation and reflection; supporting their processes of discovery, awareness building, and collective problem-solving; and helping them to develop the knowledge and skills for making a difference in their world" [149] (p. 17). As it is known that disabled people are disproportionately negatively

impacted by environmental issues such as natural disasters and extreme temperatures, as well as environmental activism such as the plastic straw ban [21–24,26,27], their unique lived experiences and coverage of their contributions within academic literature could be beneficial to creating a more accessible worldview within EE discourses. Through a role theory lens [145], this coverage could also encourage the participation of disabled people within EE in roles other than learners.

Therefore, the coverage of disabled individuals within EE needs to exceed disabled people being mentioned only as learners and further include roles b–c, and especially roles d–g; this can encourage the process of true participation for disabled people, and help to showcase the experiences of disabled individuals with environmental issues and discourses.

The expansion of the role narrative of disabled people in EE is also warranted by the outcomes of EE, which are awareness, knowledge, attitudes, skills, and participation [1,32]. As they are, our findings suggest that the academic literature focusing on EE falls short in all of the outcomes concerning disabled people. EE is valuable in helping individuals build the knowledge and skills to take action [35], and is linked to environmental activism [36–38] and active citizenship [39–42], both of which also include the arts as a means of achieving goals [36,40]. In all of these areas, our findings suggest that EE falls short in relation to disabled people. Only one full text from this scoping review mentioned an active role within EE for disabled people, discussing an adapted model of EE for disabled students inspiring pro-environmental behavior that would be beneficial to society [121]. There was also only one full text found from roles d–g that fit role d, by discussing disabled people contributing to disability representation within a children’s environmental magazine [139]. One of the goals of EE for learners is their “participation in activities that lead to the resolution of environmental challenges” as outlined in [32]. Therefore, it is concerning how limited the coverage of the competencies is in academic literature in relation to disabled people and EE, as well as how little disabled people are portrayed as social actors (roles d–g) within EE.

Therefore, our findings seem to question the conclusion by the North American Association for Environmental Education [44], an organization that has hosted a leading EE conference since 1972, which states that EE allows for disabled people to demonstrate positive civic relations. Our findings suggest a gap around engagement with disabled people in EE, including in connection with civic relations and active citizenship, but also in relation to disabled people as knowledge producers for EE endeavors. Furthermore, our findings suggest that non-disabled people experience a lack of literacy on the impact of environmental issues and activism on disabled people, something that has also been suggested by others [28]. For this literacy to be obtained, the involvement of disabled people in various EE roles is important, and with this literacy, non-disabled people can act as allies to disabled people.

Equity/equality, diversity and inclusion (EDI) is an ever-increasing topic in academia in general [19] and in regards to environment-focused disciplines and programs [30], including EE [93–96] and the general environmental-issue-focused workforce [92]. It is argued that “opportunities to integrate diverse beliefs, epistemologies, and ideas that have been previously excluded from science will only be realized if diversity, equity, and inclusion are part of the goals in the design and implementation of citizen science” [97], (p. 32) and it is noted that action is needed for all EDI groups, including disabled people [19]. Our findings highlight the need for EDI action for disabled people in EE. Indeed, our findings suggest that EDI has to not only focus on diversity in the workplace, but also needs to be accompanied by EDI of research topics, EDI through which social groups are covered in research, and EDI of what is taught; these are all flagged as EDI problems experienced by disabled people [14,19]. An EDI agenda that fully engages with disabled students, disabled academic staff and disabled non-academic staff could lead to an increase in other roles for disabled people in EE, as well as what is researched in EE, not only in universities, but also in community-driven research and research performed by active citizens [150–161].

#### *4.2. Impact of EE on Disabled People including Teaching in EE about Environmental Activism, and Environmental Issues Related to Disabled People*

This review also set out to examine the coverage of the impact of EE on disabled individuals, under which we included the facet of teaching in EE about Environmental Activism, and Environmental issues related to disabled people.

As to the impact of EE on disabled people, we found only nine sources. Within these, four sources did mention how adapted EE for disabled students may lead these students to pro-environmental behavior and environmental awareness that benefits society [121], which aligns with the goal of participation for learners of EE according to the United States Environmental Protection Agency [32]. The other mentions of the impact of EE on disabled people were either: medicalized, stating that EE improves ADHD symptoms [136]; discussions of EE improving social skills or academic performance; [135] or simply statements that EE may be beneficial for these students, while failing to elaborate how [122].

It is known that disabled individuals are often more negatively impacted by environmental issues and discourses [20–24,26–28] including environmental activism [28,102,103], and disabled youth are under-researched in relation to youth environmental activism [28]; moreover, it is known that EE is seen to inspire valuable social action such as pro-environmental behavior, sustainability, the conservation of resources [35,72,74,79,80,84], as well as to help manage disaster risks [78]. However, no abstract or full text discussed how disabled individuals are impacted by environmental issues and environmental discourses as a justification to involve disabled people in EE, or to increase the literacy of all EE learners on the impact of environmental issues and activism on disabled people, or to inspire environmental based social actions by, for and with disabled people. Our findings suggest that there is a need for academic literature to further examine the impact of EE for disabled people.

Considering associations for EE wish to further involve disabled people, as can be seen through a document from the National Environmental Education Foundation stating that they wish to “develop a better understanding of how different audiences (reflecting a diversity of gender, race, ethnicity, culture, socio-economic status, and disabilities) think about and use natural areas and how to increase access to nature for all Americans” [147] (p. 58), this scoping review is relevant in showing how the current portrayal of the participation of disabled individuals within EE is lacking and must be improved. With these findings, one can conclude that disabled individuals are rarely represented in EE roles besides as learners, and that more research is needed to fill the gaps of roles b-g in academic literature, and to encourage disabled people to take on other roles as well [145]. One can also conclude that more research is needed to examine the impact of EE on disabled individuals.

Our data demonstrate the lack of engagement with disabled people as social actors, and the limited information available regarding the impact of EE on disabled people, within academic literature. The coverage and inclusion of disabled people within academic literature and beyond are important to examine, as diverse participation leads individuals to consider the experiences of others and recognize the social barriers that marginalized groups, such as disabled people, face; furthermore, this coverage may encourage the participation of disabled people in various EE roles [145,146]. Given our findings, more research is needed on the roles that disabled people may play in relation to EE, and the impact of EE on disabled people.

## **5. Conclusions and Future Research**

The findings of this scoping review suggest that there is a significant gap in academic literature surrounding the coverage of disabled people in EE and the impact of EE on disabled people. Indeed, the fact that the first search looking at the presence of the term “environmental education” co-occurring with disability terms in abstracts only generated 10 hits, and that the search modified to allow for the disability terms to appear in the full text did not generate many more hits (73), resulting in only 27 sources with relevant content (counting a source wherein we investigated the abstract and full text as one source), highlights the lack of engagement with disabled people in the EE focused literature.

Given that participation to resolve environmental challenges is said to be one desired outcome of EE [32], our findings are problematic. Disabled people were most frequently referred to as having a learning role concerning EE, and full texts and abstracts that mentioned disabled people as learners often discussed this alongside themes of accessibility and inclusion. Given that the roles one expects themselves to fulfil in society are impacted by the role expectations of others [145], the narrative seen in relation to the role of disabled people in EE may disempower disabled people who wish to take on other roles in EE.

Our findings suggest opportunities for further research to fill these gaps. The contributions of disabled people to EE and discourses surrounding EE may be valuable to address the harmful discrepancies experienced by disabled individuals surrounding the impact of environmental discourses and environmental problems [21,23,25–27]. As disabled people are experts regarding their social state, their lived experiences may facilitate meaningful change and allow for the content of EE to be more relevant to disabled individuals; moreover, understanding these experiences may help non-disabled individuals comprehend the diverse realities in our society and consider the perspectives of disabled people in their lives. Involving and examining disabled people in EE and EE literature could also allow for the improvement of inclusivity within EE and environmental discourses [148]. Our findings also suggest many potential research opportunities investigating the impact of EE on disabled people, such as how EE may best inspire social action for disabled learners, and the barriers disabled people may face to taking social action after EE. There are also research opportunities regarding how EE curricula cover disabled people, and how active citizenship education curricula cover EE and disabled people.

Many articles engage with what should be part of EE academic curricula and which curricula should have EE components [34,85–90], and studies revealed that environmental educators feel that EE is not being realized in existing curricula [91]. Our findings suggest a vast opportunity for EE curriculum research to improve curricula in many ways with regards to disabled people.

Given that EE is described as a type of active citizenship training [32], many studies are needed that look at the relationship between disabled people and EE through an active citizenship lens, something that is missing according to our findings, and which has to include disabled people within and outside academia. Studies are needed that aim to highlight and deconstruct barriers to positive civic relations after EE for disabled people, as well as studies that indicate the best methods for engaging disabled people with active citizenship after EE. Research can be conducted to better link EE to EDI as it relates to disabled people. Indeed, given the increasing focus of EDI as a policy framework in many universities and the ever-involving actions linked to EDI, research on the linkage of EDI and EE in relation to disabled people could be a vast opportunity.

Finally, one could use other search terms and their combinations beyond EE as some might cover EE without explicitly using the term “environmental education”.

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