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Essay

Insights and Next Challenges for the Italian Educational System to Teach Sustainability in a Global Context

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Abstract: Education is recognized as a dimension in which a more sustainable future can be promoted and supported. It is described both as a specific goal under the UN Sustainable Development Goals (SDGs) and as a goal within other SDGs. Since sustainability can be taught at all levels of education, students progressively acquire a variable knowledge of these issues and find academic, professional and social contexts in which they are expected to implement this knowledge. Italian universities could gradually adapt to incorporate this knowledge through specific courses, the integration of sustainability in learning programs, and the promotion of sustainable behaviors. This offers a unique opportunity to integrate sustainability in didactic activities and in the whole academic environment, presenting the university as a model for a more sustainable life. The same path can be followed by other institutions engaged in lifelong learning and improving general education and sustainability literacy. This essay presents a general diagnosis of the current situation in the global and national integration of sustainability in education, the level of knowledge of Italian students and teaching staff about sustainability, why this knowledge should be enhanced, and how lifelong learning can harmoniously continue the process to achieve such integration.

Keywords: sustainable development goals; 2030 Agenda; Italy; sustainable education; education for sustainable development

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1. Introduction

The global determinants of development and well-being include physical and mental well-being, adequate healthcare, social and gender equality, respect for human rights and the building of a democratic and peaceful society, ensuring decent working conditions and fair wages for all workers, and quality education for all, regardless of their economic opportunities, personal circumstances, or social status [1]. Each of these determinants must be supported by appropriate policies, with both people and available resources playing a critical role. As their effectiveness depends on how people invest and use them [2], the most important determinant of development is ultimately people with their knowledge, skills, attitudes, personal beliefs, conscience, and personal commitment [3]. Consequently, education is of great importance as it trains citizens and professionals and guides actions and behaviors [3,4]. Education determines a positive impact by improving health in populations, economic growth and working conditions, lowering unemployment rates, reducing poverty, discrimination, crime, conflict, and terrorism, and supports environment protection and the control of climate change [5]. Thus, the challenge of achieving quality education and literacy is a long-term investment in removing the barriers that slow the path to sustainable living and development [6]. As stated in the document "Our Common Future", also known as the Brundtland Report (1987) [7], sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". In order to translate this

definition into specific and everyday actions, it is necessary to know, accept and use the transformative power of education on individuals by promoting the acquisition of cross-cutting competencies such as critical sensitivity, analytical skills, introspection and orientation towards self-improvement and personal growth in harmony with other people and the environment [8]. This should ultimately lead to peaceful, prosperous, equal, and sustainable societies where everyone can self-actualize, improve living conditions, solve problems, and contribute harmoniously to the well-being of all without leaving anyone behind [1,9]. The concept of well-being itself can be strongly influenced by education, as it identifies with a lifestyle that enables one to live decently without compromising the environment, social dynamics, and the needs of others [10]. This essay, in light of the available literature, aims to provide an overview of the current integration of sustainability in Italian compulsory education. To this end, we conducted a general diagnosis, examining sources from the existing literature, national regulations, and reports from national and European institutions.

2. Education as a Goal for Sustainable Development in a Globalized World

2.1. Millennium Development Goals and Sustainable Development Goals in the Age of Globalization

In 2015, 193 countries of the United Nations adopted the Sustainable Development Goals (SDGs) as part of a program of global scope, the 2030 Agenda [1,11]. The program aims to achieve, in a clearly defined and measurable way, high standards in various areas that impact the well-being and sustainability of humanity. These include good health, poverty reduction, safe water and food for all, fair jobs, gender equality, environmental protection, respect for human rights, and peace among peoples [11,12]. The SDGs replaced the previous Millennium Development Goals (MDGs), adopted in 2000 [13]. Part of the obstacle to achieving the MDGs was the often-confusing information on how to measure their realization [14], mainly committing developing countries and without offering solutions to complex socio-political, demographic, economic and environmental problems [14]. The path to sustainability is embedded in the complex framework of globalization, requiring a profound analysis of how sustainable development can be realized in this scenario, taking into account its roots and principles. Education is considered a cornerstone of a more sustainable future, being both a specific SDG and a target in other goals [15]. In particular, SDG target 4.7 specifically regards learning for sustainable development, which not only considers environmental protection, but also aims to create a cultural space for social responsibility, rights and citizenship in education [16].

2.2. Intertwined Goals for Intertwined Subjects: A Challenge for Educators

As the SDGs are closely intertwined and interdependent, any action on one aspect of a goal also impacts other goals and targets, and education actions are no exception [17]. Moreover, global commitment of the education sector can accelerate the achievement of SDG 4 and the other goals in all learning contexts and levels, from kindergarten to higher education and lifelong learning [18]. Each intervention should be tailored to maximize its effectiveness and ensure its maintenance beyond short-term evidence, always keeping in mind that a globalized world may bring sudden and hardly predictable changes to the status quo that rapidly transform individuals, professions, policies, alliances, and partnerships. Social and economic relations among countries and populations have become even more complex, harboring profound equity problems that leave the weaker subjects vulnerable and make change even more difficult. Therefore, solutions should be sought to integrate sustainability into current didactic activities on a global level without overburdening teaching programs and upending the existing educational system [19]. Such solutions should be designed to be flexible, resilient, and easily adaptable to unforeseen events or troubled times. Moreover, an increasingly important factor influencing human activities, lifestyles, and behaviors is represented by Internet of Things (IoT) systems. The coexistence of human activities and "smart" technologies and devices, such as smart cities, buildings, energy management, traffic management, and patient healthcare monitoring, facilitates the

nudging of behaviors and subtly permeates our everyday routines [20]. Cities and everyday contexts are becoming smart habitats that exist with us rather than for us, potentially representing a powerful transformational lever and becoming a matter of behavioral psychology, so much so that the term Internet of Behavior (IoB) is emerging as the next generation of IoT [21]. In the educational context, teachers therefore have the important task of facilitating learning in schools at all levels, leading to a sustainability oriented cultural background and lifestyle [22], and they should be fully aware of the dynamics in which they currently have to teach. The recent COVID-19 pandemic has showed how global, massive, and sudden events can profoundly change even well-rooted practices, including learning and teaching in education, from the most basic to the most advanced level. Thus, responsibility, multiple educational approaches and an innovative curriculum design are required to face this challenge [23,24].

3. The Integration of Sustainability in Italian Education

3.1. The Italian Institutional and Regulatory Framework

Since the educational context varies greatly from one country to another, each educational system is called to act as central interlocutor both for students and their family and social backgrounds, and for schools, universities, and educational authorities at local and regional level [25]. Although globalization blurs the differences and imbalances across single countries, normative interventions are still important to mitigate and discipline such effects. In Italy, this role is played by the Ministry of Education, the Ministry of University and Research, and the Ministry of Environment, Territory and Sea Protection (renamed Ministry for Ecological Transition in 2021). These ministries have the task of promoting the culture of sustainability and creating relationships and synergies with territorial stakeholders in a multidisciplinary perspective [26]. To this end, they have established numerous agreements with institutions, associations, and national and international organizations, especially through the Italian General Office for Students, Integration and Participation, responsible for coordinating educational programs and formative activities to promote awareness, knowledge, and commitment to sustainability and existing sustainable initiatives in schools [27]. These strategies are based on both international documents and national policies including the UN 2030 Agenda [11], the UNESCO Global Action Programme on Education for Sustainable Development [28], the UNESCO Decade of Education for Sustainable Development 2005–2014 [29], in which Italy has participated from the beginning [30], the UNESCO Education Strategy 2014–2021 [31], the UNICEF Families, Family Policy and the Sustainable Development Goals [32], the UNESCO Education for sustainable development A roadmap—ESD 2030 [25], and the UNESCO Education for Sustainable Development Goals—Learning objectives (2017) [33]. National guidelines include the Guidelines for Civic Education [34], the reports of the Italian Alliance for Sustainable Development (ASviS) [35], and the agreement of the Italian Network of Universities for Sustainable Development (RUS) [36].

3.2. Learning and Educational Outcomes: What Should We Aim for?

Collective action for sustainability must impact all three dimensions of sustainable development—environmental, social, and economic—and take advantage of how education can transform sustainability into shared awareness and responsibility [37]. The strategic goals that a school must achieve in the field of education for sustainable development were set in November 2016 at the National Conference on Environmental Education and Sustainable Development [38]. According to this program, the school is expected to: (1) strengthen in students the relationship with the environment, resources, and natural and sociocultural diversity; (2) teach the complexity and interdependence of global challenges, to act consciously in everyday life, and promote the transition to sustainability; and (3) teach students to critically evaluate collective and individual behaviors, and to recognize virtuous examples and the contribution of innovation and technology. In 2017, the Italian National Plan for Education for Sustainability [39] translated the 17 SDGs into

20 specific actions that can be implemented in educational contexts, divided into four macro areas: Buildings and Settings, Didactics and Teacher Training, University and Research, Information and Communication. Recently, the Ministry of Education has provided schools with the National Guidelines for Civic Education [35], reintroducing this subject in the didactic programs of primary and secondary schools in Italy in 2021. This decision followed the introduction of a national law in 2019 [40], which stipulates that at least 33 h per curricular year must be dedicated to the subject of civic education. In addition, from the 2023/24 school year, specific competence objectives will be introduced and the intended learning outcomes for the subject will be defined. The subject of civic education should be introduced in kindergarten, so that children become familiar with respecting and protecting other people and common resources [40,41]. To assist teachers in integrating civic education into their didactic programs and activities, a web portal has been established: "Civic education—a path to educating responsible citizens" [42]. Moreover, the ministerial guidelines on environmental education for sustainable development describe specific didactic paths, forms, and competencies for each school level [43]. For all school levels, the Italian educational system adopts the Recommendation of the European Parliament and of the Council of 18 December 2006 on the key competences for lifelong learning: communication in the mother tongue; communication in foreign languages, mathematical competence and basic competences in science and technology; digital competence; learning to learn; social and civic competence; initiative and entrepreneurship; and cultural awareness and expression [44]. The specific learning objectives and activities for each Italian school level are summarized in Table 1 [45–48].

Table 1. Learning outcomes in the Italian school system according to school level.

Specific Learning Objectives and Activities for Each Italian School Level.			
School Level	**What Should Be Taught**	**How Should Be Taught**	**Subject/Teacher**
Kindergarten	Identity Autonomy Competence Citizenship	Attention and intention—Organization of time and space—Learning to consider rules and consequences in action and communication—Listening—Basics of rights and duties, ethic, respect for people, environment and nature	All teachers
Primary school and lower secondary school	Language History Geography Math and statistics Computational thinking Scientific thinking Music and arts Knowledge of body and movement	Fluency in Italian for future educational progress and ability in critical thinking and prevent future marginalization—Strengthening multilingual education, especially through Content and Language Integrated Learning methodology—History oriented to develop a solid national, European and global citizenship—Geography integrated with history and social sciences oriented to environmental and biodiversity protection and recovery, fight against pollution and climate change, active citizenship, Constitution—Numbers, space and figures, functions and prevision ability through data—Problem solving and strategy—Planning through logic—Scientific method and ability to rationally read reality—Music and arts to empower creativity, sense of belonging, education to protect environmental and artistic patrimony—Sport and movement to know the body, promote healthy lifestyle and foster cognitive, social, cultural and affective experiences	All teachers with special mention of history, geography and physical education teachers, since their subjects are a link to interdisciplinary instruction
Upper secondary school—high	All subjects, with specifications according to the different type of school (classical, scientific, linguistic etc.) and year of attendance (1st–5th)	Each subject receives its general guidelines that include the expected competences at the end of high school, followed by specific targeted learning outcomes for subject areas based built on two two-year periods plus the fifth year	All teachers and subjects through their content, activities and languages
Upper secondary school—professional school	All subjects aimed at motivating students to develop their own life and work project and build solid formative alliances with the labour market, professional development and research	Building and assessing competences through an integrated method—Project development; Effective connection between general education and specific field of study—Technological education—Workshop as a learning method—Integration of transversal knowledge about science, the environment, legality, citizenship and the constitution—Safety culture at work	All teachers and subjects through their content, activities and languages
University	All disciplines and courses of study	In accordance with the Qualifications Framework for the European Higher Education Area (EHEA), the Standards and Guidelines for Quality Assurance in the European Higher Education Area and Recommendation 2008/C 111//01/CE of the European Parliament and of the Council including the European Qualifications Framework for lifelong learning	All teachers and subjects through their content, activities and languages

In addition to these actions, the Ministry for Ecological Transition has developed the National Strategy for Sustainable Development (SNSvS), which in turn includes education for sustainable development within the framework of "vectors of sustainability" [49]. To our knowledge, there is currently no specific institutional tool to verify whether teachers are implementing sustainability in their respective curricula. However, the Italian National Recovery and Resilience Plan (PNRR), using Next Generation EU funds, envisions a comprehensive reform of teachers' careers to ensure, among other things, more equitable, sustainable, and inclusive education at all levels. Within this framework, the professional advancement of teachers will be conditional on ensuring quality of service and continuous professional development [50].

3.3. The International Perspective

In addition to these national strategies for integrating sustainability issues into compulsory education programs, the role of higher education in creating a culture of sustainability among future professionals is widely recognized, and universities have been called to act since the 1990 Talloires Declaration [51]. Indeed, university has already been recognized as an ideal place for human and social change, as it provides citizens with the skills needed to live sustainably at the personal, professional, and community levels [52]. According to Bhowmik et al. [53], this ideal state can be achieved through actions covering four key dimensions of Research, Education, Governance and Operations, and External Leadership. This means that universities should not just teach sustainability for the sake of teaching, but rather strengthen their role in disseminating knowledge and developing skills by promoting research on sustainability issues, influencing the progressive alignment of policy and governance with the SDGs and sustainability principles, and promoting advocacy and public engagement. Outreach activities influenced or determined by academic roots are therefore considered essential.

University has the potential to bring about profound changes in sustainability beliefs and behaviors and to implement these changes in a wide range of applications in both professional activities and lifestyles [54], as recently highlighted by a systematic literature review published in 2022 by Gonçalves Serafini et al. [55]. While agreeing that universities should act as promoters of sustainable development through the pillars of teaching, research, outreach, and management, they provided an overview of the documentary corpus on sustainability in academia since 2017. They found that the number of research papers published since 2019 is increasing, as the topic becomes more popular. Most of these papers were published in Europe (47%), followed by Asia (11%). Spain, in particular, has established itself as a leader in this area of research, paving the way for other experiences and pioneering the importance of elements such as institutional support for universities, investment in the presence of highly qualified professionals, and the integration of sustainability into daily lifestyles, beyond institutions and theories. Gonçalves Serafini et al. [55] found that several tools were used, with documents and reports being the most common followed by questionnaires. The target audiences included all major categories represented in the academic environment: students, academic community, professors, and managers/researchers.

Although integrating sustainability into academia should be holistic and multidisciplinary, addressing universal issues and exploring the multi-layered relationships between people and social, environmental, economic, legal, and political contexts [56], recent evidence shows that there are still difficulties in implementing such integration, due to resistance from internal and external stakeholders, lack of time, training, incentives, planning, institutional support, and didactic approaches focused on problem-based learning [57–59]. An entire section of the review [55] is dedicated to the barriers found in the implementation process, which can be grouped into six dimensions: human resources, financing, government, organizational, social and communication.

3.4. Recent Research and Findings among Italian Students and Teaching Staff

In Italy, a first national call for best practices in sustainability education was launched in 2017 during the first national conference "Education for Sustainable Development in Italian Universities". It provided useful information on the implementation of such initiatives and an overview of the topic in Italian higher education institutions, while showing that there was a lack of a national strategy and of a coordinated, homogeneous plan to integrate the SDGs in academic curricula. Sustainability was often still considered as a separate discipline to be added to existing teachings and curricula, instead of adapting the curricula in a more sustainable key [60]. Currently, the Italian University Network for Sustainable Development (Rete delle Università per lo Sviluppo Sostenibile, RUS) counts 78 Italian universities under its coordination; it provides standards, methodologies, output and outcome indicators to facilitate the evaluation of each university and the comparison between different academic institutions, useful for a more open and precise relationship with stakeholders, and publishes an annual report [61]. While more certainly must be done to integrate sustainability into curricula, teaching, and statutes, the current situation of teachers and students in the Italian school system, including tertiary education, is worthy of attention. Both teachers and students should find in the educational system an environment that strengthens their awareness, knowledge and behaviors related to sustainability and contributes to create a sustainability-oriented collective consciousness. In 2019, a cross-sectional study was conducted in nine Italian universities to assess the general awareness, knowledge, and attitudes of first-year students towards the SDGs and the 2030 Agenda [62], with 1676 questionnaires collected through the compilation of an online survey. Most of the respondents (78%) had never participated in a didactic activity on the SDGs and the 2030 Agenda. Students' general knowledge of sustainability was low, with few exceptions related to greenhouse effect or the 2015 Paris Agreement on Climate Change. A higher level of knowledge was associated with students attending science and humanities courses. School was cited as the main source of information on sustainability topics, followed by online sources. Nevertheless, attitudes toward sustainable development concepts, indicators, documents, and models were generally moderate to high, with the three most interesting topics being greenhouse effect, health inequalities, and ecological footprint. The highest attitude score was found among humanities students, followed by business students. A positive significant relationship related to high learning expectations was found for prior participation in SDG-related activities. A more recent study, also focusing on knowledge, information sources and attitudes, was conducted among teachers of Italian compulsory schools in 2021 [63], answered by 417 teachers, most of them (78%) being professors teaching in lower- or upper-secondary schools. This survey included an additional section that explored the school's commitment to integrating sustainability into the current teaching program. The most frequently represented subjects were humanities and natural sciences. Most of the teachers (93%) indicated that sustainability topics were already well integrated into their school's didactic programs and activities, primarily through active citizenship projects and lectures. Overall, teachers were found to have a good level of knowledge on sustainability topics for only few items in the survey, including in particular greenhouse effect, ecological footprint, and resilience. The most important source of information was the internet, followed by paper sources (newspapers/magazines/books). In terms of attitudes, most teachers indicated that sustainability should be taught in specific lessons (44%), while some acknowledged that sustainability could be taught as an integral part of their lessons, especially for the SDGs and the 2030 Agenda, ecological footprint, and the greenhouse effect. Regarding schools' commitment, at least good commitment was reported with the highest scores for recycling and waste reduction and fighting inequalities, poverty, and social exclusion. A positive relationship was found between teachers' highest level of knowledge and a favorable environment at their school in terms of sustainability ($p = 0.003$; Kruskal-Wallis test).

3.5. Observations on the Italian Situation: What Could We Learn?

The level of knowledge found among the first-year university students seems to reflect what is currently taught in school in Italy about sustainability. In fact, the higher knowledge was related to environmental topics, such as the greenhouse effect or the ecological footprint, while the economic and social components of sustainability were mostly neglected. Interest in sustainability topics seemed to confirm the same, while lesser-known topics were associated with lower learning interest. Moreover, most students reported never having participated in a didactic activity or educational initiative specifically related to the SDGs or sustainable development, suggesting that integrating sustainability into academic activities could potentially fill these gaps. The results of the survey on compulsory school teachers confirmed that environmental topics were the most familiar. The internet was the main source of information on sustainability topics, suggesting a possible lack of teaching materials on this topic. This finding becomes even more significant when considering that first-year university students indicated school-based learning as their main source of information on sustainability. Sustainability is still perceived as a separate subject, in contrast to the desirable holistic approach to implement the SDGs and the 2030 Agenda. Ultimately, reported school engagement reflects a more active commitment to environmental issues, such as proper recycling and waste reduction, while it hardly mentions the role of public compulsory education in balancing social issues, giving equal opportunities to all students regardless of their background.

3.6. Considerations on the Current Integration Process

Overall, these findings lead to reflections on the need to integrate sustainability into the educational programs of formal educational institutions and, even earlier, into teacher education. The inadequacies found in teacher preparation on sustainability and their preference for unconventional information channels urge the integration of existing formal teacher education methods with other tools from the non-formal and informal education sectors. Moreover, people's educational needs do not end with the classroom, but continue throughout life, highlighting the critical importance of lifelong learning. The research conducted in Italy came to findings consistent with other experiences in recent years [55] and help fill a national evidence gap regarding the national situation. These results also confirm previous findings [54] on the importance of implementing sustainability in daily life: translating knowledge into everyday practices, behaviors and habits must continue beyond the boundaries of school and formal education. In this sense, Leal Filho et al. [59] warned of the risk of falling behind, jeopardizing past achievements, and slowing the path to sustainable development. This is highly dependent on the extent to which sustainability is prioritized in the learning process and how it is effectively linked to outreach activities. If sustainability is still viewed as a challenging topic, a compartmentalized issue, an imposed burden, and not a collective responsibility, the ultimate goal of implementing sustainability in everyday life will not be achieved. This discrepancy becomes even more evident when enthusiasm, resources, effort, and commitment are put into the initial phase of implementation but are lost or misplaced in the subsequent continuation. Another symptom of incomplete knowledge about sustainability and its impact on engagement and commitment is that awareness and knowledge about the environmental dimension of sustainability is predominant, while the social and economic dimensions are neglected. The Italian situation is similar to that found in other countries when evaluating the same aspects. For example, in an Argentinian study [64] conducted on university students from different fields of study (Agricultural, Economic and Social Sciences), the words most frequently associated with sustainability were "environment", "ecology", "resources", and "care" regardless of educational background. Only a few respondents were able to name the environmental, social, and economic dimensions of sustainability simultaneously.

4. Lifelong Learning for Sustainability

Lifelong learning is progressively gaining global recognition for its benefits for individuals and communities. Lifelong learning impacts all aspects of society, strongly encouraging active citizenship and being fundamental to improving global population health and well-being as education in general. Therefore, it is critical to engage all learners, regardless of gender and age, in a lifelong learning process that aims to achieve the SDGs [11]. The idea of lifelong learning emerged in the second half of the 20th century, fostered by the development of new technologies that enabled global access to information. It became important to be up-to-date and proactive, as globalization encourages people to constantly improve their knowledge and skills so that they do not become obsolete. Consequently, lifelong learning is crucial for dealing with a rapidly changing world [65]. Learning, therefore, can no longer happen in a limited place and time dedicated to information acquisition, but becomes a voluntary, ongoing, self-initiated process that takes place beyond compulsory education, aimed at personal development [66]. Lifelong learning encompasses a wide range of activities with varying degrees of structure, as adult learning can be formal, non-formal or informal. Formal learning is provided by educational institutions and takes place in a structured setting, usually a classroom. Non-formal learning refers to organized activities that take place outside of formal education, with a curriculum and a teacher. Informal learning is the least structured form of education, often spontaneous and unplanned [67]. In their report "Adult learning: it is never too late to learn" in 2021, the Commission of the European Communities highlighted the importance of lifelong learning for competitiveness and employability, as well as for personal development, social inclusion and active citizenship, and emphasized the central role of adult education in lifelong learning [68]. The first attempts to bring the vision of lifelong education into international policies date back to the international seminar of the UNESCO Institute of Education (UIE) in 1952, entitled "Adult Education as a Means of Developing and Strengthening Social and Political Responsibility". The 1972 Edgar Faure report made lifelong education the focus of UIE's work [69], followed by several publications describing and evaluating lifelong education. The Fifth International Conference on Adult Education (Hamburg, 1997), was a defining moment for the global recognition and legitimization of adult and non-formal education. The subsequent VI Conference (Brazil, 2009) confirmed this by emphasizing its life-encompassing nature and identifying the actions needed to implement its vision. After the transformation of the UIE into the UNESCO Institute for Lifelong Learning (UIL), the organization's focus on adult education and lifelong learning has become even clearer [70]. The UIL supports policies and practices related to lifelong learning, promotes adult education, and publishes the International Review of Education—Journal of Lifelong Learning, focusing on research in adult education and formal and non-formal education [71]. Adult learning is one of the European pillars of social rights and a priority of the European Education Area for 2021–2030 [72]. The European Agenda of Skills for sustainable competitiveness, social fairness and resilience has identified a wide range of initiatives and actions to increase adult participation in lifelong learning activities [73].

4.1. Formal and Non-Formal Lifelong Learning

The concept of formal lifelong learning is often associated with the University of the Third Age (U3A), an international movement that originated in France in 1973 at the Faculty of Social Sciences in Toulouse and then spread worldwide [74], with the aim of providing education to people who are no longer in full-time employment. Their courses typically focus on educational, social, and fitness activities, promoting learning for its own sake. Many continental European countries have drawn inspiration from the original French model, characterized by the affiliation with a public University that directly manages the third-age university and provides a formal, structured learning environment and highly qualified professors. In contrast, many English-speaking countries have pursued a non-formal, voluntary learning model that places third-agers and teachers on the same level and relies on the senior member's commitment [75]. The International Association

of Universities of the Third Age (IAUTA), the global organization of U3As from every continent, emphasizes the importance of innovative forms of social, intellectual, and physical activity to promote health and recommends giving seniors the tools to better understand our changing society. For example, many third-age universities offer courses, lectures, and workshops on environmental sustainability and social responsibility [76]. Among them, the University of the Third Age in Cambridge offers a course that aims to improve knowledge and awareness about environmental footprint through games, case studies and discussions led by a retired environmental manager [77]. In Italy, there are two different organizations that bring together Italian third-age universities with the common goal of social progress [78]. One of the longest existing Universities for the Third Age and Leisure (UTETD) in Trento declared its active commitment [79,80] to achieving three specific SDGs of the 2030 Agenda and organizes sports courses, activities to improve learners' health literacy, and lectures on climate change and sustainable development. The COVID-19 pandemic played an important role in catalyzing online education, and the third-age university was no exception [81]. Indeed, the Italian educational landscape for third age education has been enriched by a broad catalog of online courses, in line with the commitment to ensure equal access to knowledge [82].

4.2. Informal Lifelong Learning

As mentioned earlier, informal learning takes place outside the curricula of formal and non-formal educational institutions, without certified teachers or prescribed programs, through unstructured, direct activities that focus on the learner [83]. Because of its flexibility, informal learning can be adapted to a variety of settings and has the potential to overcome many of the global barriers of traditional formal education. Where access to formal learning is limited by poverty or lack of facilities, informal learning can provide an alternative, more affordable and accessible, to learn skills and practices. These equity implications are particularly important for girls, women, racial minorities, and people at the margins of society, including millions of adults who lack basic skills worldwide [72,84]. As most of the knowledge we use in our daily lives is acquired through informal learning [83], addressing sustainable lifestyles and behaviors is not just a matter of formal practice, curricula, and intended learning outcomes. More likely, it is a matter of opportunity. A Turkish study [85] published in 2014 reports interesting findings on environmental awareness of secondary school students that resulted to be linked with family income and educational level, and urban setting for living. Since environmental education in schools is inadequate and consequently participation in environmental activities is low, external sources of information and entertainment such as mass media may have a crucial role in disseminating content, messages and initiatives.

4.3. Frontiers and Recent Initiatives in Informal Learning

Despite its importance, informal learning has been neglected by educational institutions and policy makers in the past, and has only recently gained more international recognition. In 2009, the UK Department for Innovation, Universities and Skills published "The Learning Revolution", a white paper that officially recognized the benefits of informal learning and announced a series of government-wide strategies to support it. It promotes informal learning activities in libraries, museums, arts and sports, broadcasters, community organizations, healthy living centers, online communities, and calls citizens and partners to action [86]. In 2012, the Council of the European Union itself recognized the results of informal education in terms of the acquisition of competencies, skills and knowledge, the positive impact on employability and participation in lifelong learning. Because informal education holistically incorporates the cognitive, emotional, and social dimensions of learning, it can generate strong engagement among learners due to its experiential value [87], explaining the potential of informal learning to meet society's needs through civic education [88], which is seen as education's contribution to the development of a citizen—a concept that closely correlates with the vision of lifelong learning [89]. Going beyond the

traditional, passive approach of school-based civic education, the characteristics of informal learning promote a more proactive, participatory attitude toward society that leads to an overall collective well-being [88]. Such activities are powerful reinforcers of solidarity networks and social responsibility, which are essential for transforming the global society toward sustainability. Indeed, the European Council Recommendation 2012/C 398/01 identifies volunteering as one of the most effective informal skill-building activities [90]. The final publication of the partnership project "Back Together—exchange of good practices of adult civic education" between Europe4Youth and other international associations recommends best evidence-based practices on how to engage adult learners in civic education activities. Environmental volunteering is encouraged in all its forms [91]; volunteers can participate in waste cleanup or reforestation campaigns, disseminate informational materials, and raise awareness in their local community through debates and spontaneous actions. Since 2015, the European Sustainable Development Week (ESDW) is a pan-European event that takes place every year to publicize activities, projects and national initiatives promoting sustainable development [92]. Italy participates in ESDW with initiatives organized by public administrations and civil society related to the application of SNSvS at regional and local level. The main objective is to give voice to civil society actors involved in sustainable development and to disseminate knowledge among the population. An informal initiative aimed at raising awareness about sustainable development is, among others, the "Sustainability is human" project of the independent company "Leftovers—Sustainability through actions" [93] based in Milan, which responded to the 2018 call for proposals of the Italian Ministry of Environment. The aim of the project was to map sustainability practices promoted by third sector organizations, associations, informal groups, companies, foundations and cooperatives under SDG 11. The result is a comprehensive, useful tool for citizens to better understand the landscape of existing good-practices and inspire their own contribution. It is worth mentioning the contribution of the Italian "Remedia" (now Erion), a waste management consortium dedicated to environmental protection, circular economy and technological innovation. It is currently the largest Italian company for the management of waste related to electronic products and carried out the project "Sustainable Captain and small RAEE" based on game-based learning. Between 2018 and 2019, they organized a traveling show in 20 shopping malls throughout Italy, distributing informational materials on e-waste and recycling methods. According to the promoter, Italian Sustainability Forum, this initiative directly involved nearly 150,000 participants across Italy, while reaching more than 1,500,000 people through the social campaign [94].

4.4. Learning beyond Framed Approaches: The Ultimate Educational Empowerment

Although the distinctive feature of informal learning is having no structure, quality lifelong education is a holistic, multi-faceted process that encompasses formal, non-formal, and informal learning and can be pursued on a global scale. By ensuring a multi-perspective approach and the emergence of empowered, critically thinking, and aware individuals, education can help create new societies that place the well-being of people and the environment at the center of all their policies.

The main elements characterizing formal, non-formal and informal education are presented in Figure 1.

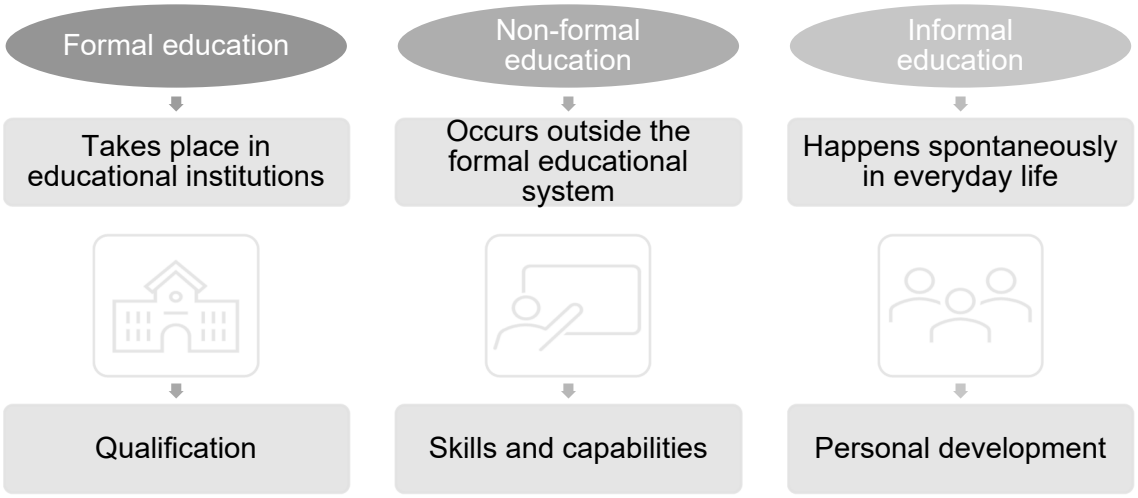

Figure 1. Main elements of formal, non-formal and informal education.

5. Impact of Lifelong Learning and Health Literacy on Sustainability and the Global One Health Approach

The structure of the 2030 Agenda with its five pillars of People, Prosperity, Planet, Peace and Partnership ("5Ps") [11] is consistent with the multidisciplinary global One Health approach, which views human health as inextricably linked to animal and environmental health. This bond of deep interdependence emphasizes the duty to respect the balance between these components, focusing on human activities, occupations, and relationships that affect them [95]. The One Health approach is an action rather than a concept, and has already been recognized as a global movement by the European Commission, the U.S. State Department, the Centers for Disease Control and Prevention, the World Bank, the World Health Organization, the Food and Agriculture Organization, the World Organization for Animal Health, and several nongovernmental organizations and research institutes [96]. Given the complexity of this issue and its environmental, economic, and social roots, it is important to remember that any defined goal and the actions based on it are driven by people who are not only influenced by shared agreements, plans, and promises, but also have a base of conscience, emotion, and sensitivity that cannot be overlooked, as highlighted by the publication of the Pope Francis' encyclical "Laudato si'" in 2015 [97]. One of the problems that still affect the implementation of sustainability is the lack of sustainability literacy, which is considered as a set of skills, attitudes, competencies, dispositions, and values that a person possesses and that can be fostered and adapted through active learning so that people are enabled to participate in sustainable practices. Such capabilities empower individuals to critically read society, expose its lack of sustainability through social structures, and to act against it [98]. A range of skills should be developed, including ecocriticism, basic economic awareness, advertising awareness, systems thinking, social conscience, and new media awareness, calling for actions that enable civic engagement, human re-education, institutional change, and the creation of a learning society. Environmental literacy goes hand in hand with this: the goal is to teach learners, through self-knowledge and the acquisition of problem-solving skills, to evaluate different points of view and to try to change the human behavior from which daily decisions affecting the environment arise [99]. Education improves health in two ways: it promotes positive health-seeking behaviors while increasing scientific knowledge and skills about diseases and access to healthcare and preventive measures. Evidence shows that investments in education have a significant impact on health and, in turn, on the economy and society. Integration of provider prescriptions and patient decisions is best achieved through education: improving general and health literacy enables more informed decisions, greater engagement, and increased effectiveness in maintaining health and healthy lifestyles [100]. Nevertheless, available data show that Italy scores lower on the general health literacy

index compared to other European countries, representing a serious national problem, as more than half of respondents have limited ability to obtain, understand, process, and use health information [101]. Other critical aspects of literacy include nutrition literacy [102] and environmental literacy [103], which both include functional, relational, and critical skills. Green competencies in the workplace are not limited to academic preparation, as they are also needed in jobs related to tourism, agriculture, cooking, and sustainable mobility, for example [103]. Companies and employers increasingly consider these skills as important requirements, not only for highly specialized profiles, but also for people looking for a job after compulsory education. In Italy, green skills are required for more than 75% of new job openings in 2021, just after soft and entrepreneurial skills [104]. In addition to the positive impacts of sustainability determined by sustainable policies and actions, there are also negative impacts already affecting young people and future generations, due to inaction and lack of awareness of sustainability in recent decades, as youth and young adults feel the inevitable consequences for the planet in the future deeply. A recent article published in the Lancet in 2021 shows impressive levels of climate anxiety among children and adolescents, who feel fearful, depressed, and angry, and report a sense of betrayal of their lost opportunities, rights, health, and happiness [105]. When globalization and its consequences are viewed from a global perspective, seemingly insignificant actions such as purchasing responsibly, committing to recycling waste, or striving for sustainable mobility not only impact limited groups of individuals or cities, but can profoundly affect the lives of people who live geographically far away. Young people are much more aware of these dynamics than older generations, as they have always lived in a globalized reality and have witnessed events of worldwide scope that affect their quality of life, safety, rights, working conditions, mobility, or purchasing power, seemingly appearing as distant facts while subtly altering the internal structure of society and fostering mistrust, fear, surrender, or revolt. One of the most recent examples in this sense is the fashion and textile industry, which was brought to the collective consciousness by the collapse of the Rana Plaza factory in Dhaka in 2013. It was the deadliest unintentional accident with structural failure in modern human history and the deadliest garment factory disaster in history [106]. This reminded us that interdependence is one of the consequences of globalization and that education can facilitate acceptance and the right choices by all stakeholders to accelerate the achievement of the SDGs.

6. Final Observations

6.1. Limitations

A first limitation of our analysis may be the missing or incomplete perspective of some categories of the educational context, as the level of commitment, awareness, and proactivity of educational leaders and administrative staff should be added. Therefore, a comprehensive picture would benefit from a broader consideration of all stakeholders. We carried out a general diagnosis, so we may have overlooked data or research which would be found in a systematic review. In addition, the studies considered in the present essay have not examined the general population's awareness, attitudes, and practices related to sustainability, so more data are needed to paint a more comprehensive picture of the implementation of the 2030 Agenda, particularly in relation to sustainability literacy and sustainable living are concerned.

6.2. Next Challenges for Future Research and Policies

Although environmental issues seem to be globally recognized as part of sustainability, the social and economic components are still neglected, and overall there is a need to improve sustainability literacy. These considerations could enrich the background for future research experiences, standardized assessment tools and implementation of sustainability practices in Italian schools and universities. Research could find an interesting topic by investigating lifestyle choices and sustainability levels among people, focusing as much as possible on motivations and concerns.

Given the positive influence that education has, its role in sustainability should be strengthened, regardless of people's economic opportunities, personal circumstances, or social status. The interdependence of the SDGs allows this improvement to be extended to all SDGs through better education for sustainability. Thus, every effort should be made to ensure that policies aim to introduce sustainability education at all levels of education, from kindergarten to compulsory schooling to higher education, and finally to non-formal and informal learning. This requires bold and forward-looking decisions, both at the individual and institutional levels. Perhaps the ultimate challenge is to promote awareness as a human trait, because when temporary commitment wanes, awareness persists.

6.3. Conclusions

The existing literature, regulations, and observations from various fields come to similar conclusions when they assert that achieving sustainability is a long-term, multi-faceted and multi-factorial process. In the complex context of our society, sustainable development can only emerge if each individual acts sustainably in his or her personal and professional life. The ultimate goal of this lifelong process would be the improvement of people's lives and health, environmental protection and prosperity for all countries and territories, and peace and partnership between peoples.

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