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Governance of the Implementation of Education for Sustainable Development (ESD) in Schools—Perceptions of Key Stakeholders in Education

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Abstract

Education for Sustainable Development (ESD) plays a pivotal role in facilitating a sustainable transformation. A prerequisite for the successful implementation of ESD is the coordinated cooperation of stakeholders from different levels of the education system. The present study explores the perceptions of key stakeholders in education in Germany concerning (a) the conceptual framework of ESD, (b) the present status of ESD implementation, and (c) the ideal governance of ESD implementation. An exploratory, qualitative approach was selected as the study design. A total of eleven interviews were conducted with stakeholders representing various levels of the German education system, including representatives from ministries, state institutes, associations, and school practice. The findings indicate that the stakeholders have a shared understanding of ESD, with varying degrees of elaboration and areas of emphasis. All acknowledge the advancement in the implementation of ESD, concurrently recognizing the necessity for substantial enhancement. This study's main contributions are a better understanding of stakeholders' perceptions on ESD implementation and an ideal governance model that allocates specified responsibilities across all relevant system levels and actors. A combined bottom-up and top-down approach is proposed as essential in the pursuit of fostering sustainability within and through education, encompassing professionalism, profoundness, and persistence.

Keywords: Education for Sustainable Development (ESD); Sustainable Development Goals (SDGs); sustainability; governance; perception; understanding; implementation; interview study

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1. Introduction

The planet is being forced to move away from its safe state [1,2], exceeding multiple planetary boundaries [3] with the risk of triggering tipping elements [4]. There is an urgent need for humanity to rethink and act in alignment with the United Nations Sustainable Development Goals (SDGs). Substantial efforts remain necessary, as the achievement of the SDGs continues to face significant challenges [5].

To tackle these multiple crises, a focus on the social dimension of the transformation to sustainability is inevitable. Social development is based on the concept of socioformation, which is rooted in the education of individuals and groups. This education aims to empower these entities to address these challenges in their contexts and promote

sustainable social development [6]. Education plays a pivotal role in achieving sustainable development in general by enabling learners to promote this in a future-oriented manner [7]. SDG 4.7 comprises Education for Sustainable Development (ESD) and aims to mainstream ESD in the whole education system [8]. ESD is key to the fulfillment of the other goals: firstly, there are strong links between ESD and the other SDGs [9], and secondly, a fundamental shift in thinking and mindset is critical to achieving sustainable systemic transformation [7]. Thus, ESD can effectively contribute to learners' sustainability awareness and competencies [10,11]. As components of ESD, the fields of science education and STEM primarily endeavor to furnish learners with the competencies requisite for the resolution of complex problems and the promotion of sustainable development [12].

Despite the increasing relevance of ESD in international [13] and national German [14,15] policy frameworks, as well as in the scientific literature [16], the delayed progress in mainstreaming ESD underscores the critical need for accelerated effort, as highlighted by Germany's National Platform ESD in its latest impulse paper "We must act. Now." [17]. The prevailing challenges concerning the governance mode and coordination of actions must be overcome if the implementation of ESD is to be enhanced in terms of its effectiveness. Successful governance demands recognition of stakeholder diversity, as the education system's inherent complexity results in a gradual and uneven adoption of ESD. This involves defining role-specific strategies for implementation and coordination [18] and recognizing the relevance of the formation of individuals, groups, and organizations [6].

The objective of this study is to analyze the role-specific perception of relevant stakeholders from ministries, institutes, associations, and school practice regarding the ESD concept, as well as the current status of implementation of ESD. This study will further explore stakeholders' identified obstacles to a functional governance of ESD implementation and their visions of an idealized process. The results of this study contribute to aligning governance strategies by improving our understanding of key stakeholders, some of whom have been little investigated. This fosters efficient and equitable coordination of implementation. Section 2 provides an overview of the understanding of ESD and the governance of the implementation of ESD. Section 3 explains the theoretical framework of the study, including a clarification of the terms school design, implementation, and governance, as well as the research question. After elucidating the methods in Section 4, the results are presented in Section 5. In Section 6, the present study's findings are discussed regarding the current state of research in this field, and limitations, as well as research gaps, are finally displayed.

2. State of Research

2.1. The Concept of ESD

The first UN Decade of Education for Sustainable Development (2005–2014) had the vision that everyone could "learn the values, behaviour and lifestyle required for a sustainable future and for positive societal transformation" [19]. ESD pursues a pluralistic approach that is learning-centered and explicitly incorporates different values and perspectives [20]. ESD deals with complex topics of global and long-term significance and discusses values and opportunities for action [21]. Regarding competencies within ESD, there is increasing scientific debate and a simultaneous need for research [22–24], just as there is for teachers' competencies and teachers' training [25,26].

The literature distinguishes between an instrumental approach, which is intended to empower learners to contribute to sustainable development (ESD-1, learning for sustainable development), and an emancipatory approach, which provides space for individual critical questioning of values and guidelines related to sustainable development (ESD-2, learning as sustainable development) [27]. Pettig and Singer-Brodowski refine these conceptual

discussions and address the challenges posed by a changing world: with a transformative approach (ESD-3), a greater emphasis is placed on the processual nature of sustainable development, the involved emotions, the interrogation of Western worldviews, and the differentiation between controversial and non-controversial topics [28].

ESD is considered to be successfully integrated into an educational institution if a whole-institution approach is pursued; i.e., a continuous learning process is initiated to base sustainability as a principle in all areas of the institution [29].

An authoritative overview of the central processes of ESD is provided by Tilbury [30], including (1) processes of collaboration and dialogue (including multi-stakeholder and intercultural dialogue); (2) processes that engage the "whole system"; (3) processes that stimulate innovation within curricula, as well as through teaching and learning experiences; and (4) processes of active and participatory learning [30].

2.2. Status and Governance of Implementation of ESD

In Germany, the status of implementation is systematically surveyed in ESD-specific monitoring programs. Qualitative approaches use, e.g., document analyses [14,31] or quantitative approaches, e.g., surveys [32]. In most areas of education, ESD is, therefore, seen as a specific add-on: objectives for ESD are mentioned as an additional field of action in schools, but content or concepts are not differentiated or even structurally anchored [33].

With regard to governance for the successful implementation of complex ESD, the skills and knowledge of the actors in the education system are considered to be essential prerequisites. The concept of socioformation emphasizes the importance of equipping individuals and groups with capabilities that enable transformation. In the specific case of the social challenge posed by ineffective ESD governance, this translates into the enhancement and utilization of individual talents, with the result that the frictions in the implementation of ESD are reduced [6,34]. This requires coordinated action that adapts to the unique needs of different sectors within the education system, such as administration and educational practice [35]: ideal-typically, actors either strongly identify with their organization and sectoral principles or transcend sectoral boundaries by engaging intensively with other organizations and networks beyond their own sector. Both patterns are relevant for successful ESD transfer [35]. Therefore, effective governance necessitates skill development and strategic collaboration across these varied sectors to ensure a holistic approach to ESD. During the desired transfer of ESD, new, temporary forms of coordination of action emerge between governmental and non-governmental stakeholders, given their willingness and ability to negotiate [36]. After the decline of these interim modes of governance, a sustainable effect can persist through adaptation of existing institutional structures [36].

2.3. Stakeholder Perceptions on the Implementation of ESD

Other studies have consulted stakeholders regarding their perceptions of ESD, including the concept, implementation status, and implementation strategy. Aleixo and colleagues [37] investigated the perceptions of key stakeholders in Portugal regarding the concept of sustainability, as well as the barriers and opportunities of implementing ESD in higher education. They found that their understanding of sustainability mostly aligned with the Brundtland definition, but lacked a holistic view. Their understanding of integrating sustainability into higher education institutions was also limited. Lack of funding and human resources were perceived as the biggest barriers.

Pihen and Arya [38] found that the understanding of ESD among teachers in Central American countries aligned with the principles defined by Tilbury [30], though it did not capture all facets comprehensively. They advocate for more teacher training to promote ESD teaching strategies and tools.

Burmeister and colleagues [39] asked teachers in Germany about their understanding of ESD and found that only two out of sixteen had heard of it and had a limited understanding. Teachers require more support, teaching materials, and in-service training. The authors also call for a change in school structure to better implement ESD.

Günther and colleagues [18] analyzed the views of various stakeholders in Germany regarding ESD competencies. Their responses largely aligned with the UNESCO framework. Furthermore, the study found alignment in views on competencies and the successful integration of ESD, with different emphases on aspects due to differing frames of reference contingent on the respective area of expertise. They argue that a misunderstanding of ESD competencies will not fundamentally hinder ESD implementation; only the potential for miscommunication regarding the objectives of ESD exists.

Waltner and colleagues [40] analyzed German teachers' knowledge of and perceived implementation of ESD. One-third of the teachers had not heard of ESD; however, more than 80% had taught ESD-related topics in class. The structural implementation was perceived as insufficient. Policies on ESD would not reach teachers as desired because they would not perceive or accept these policies. Teachers predominantly require training, teaching materials, and knowledge of how to implement ESD. That study concludes by calling for a bottom-up governance approach that integrates teachers' perspectives on implementing ESD and complements the existing top-down approach.

3. Theoretical Foundation

3.1. Relevant Concepts

Conceptually, this study is based on the model of education and school design [41], which, adapted to the governance of ESD implementation, emphasizes various levels for shaping change. On the one hand, the overarching framework of school design is formed by the personnel level, which includes, in particular, the school stakeholders (teachers from teacher training programs and students). The school itself is located at the organization of school and teaching level. The educational landscape includes education politics, ministries of education and cultural affairs, the Standing Conference of the Ministers of Education and Cultural Affairs, school authorities, the support system, academia, and civil society. Finally, quality management plays an overarching role as a comprehensive umbrella for all of these areas [41].

ESD is regarded as a social innovation [42]. This study conceptualizes innovations as multifaceted interventions comprising concrete measures and processes of change and improvement across three levels: the micro-level covers teaching, the meso-level individual schools, and the macro-level the entire education system with central subsystems [43]. This aspect is relevant for the present multi-perspective study and is, therefore, reflected in the coding scheme through the inclusion of multiple levels (see Table 1).

Table 1. Code scheme, based on [43].

Code	Subcode
1 ESD understanding	
2 Status of implementation	2.a Micro-level: Teaching 2.b Meso-level: Individual school 2.c Macro-level: Education system and central subsystems
3 Governance of ESD implementation	3.a Frictional 3.b Functional

Implementation describes a form of governance that aims to take up and adopt an innovation as standard practice [44]. This implicitly assumes an asymmetry in the relationship between the actors, such as those close to the state and those close to educational practice. In an adaptation process, however, the context of implementation (e.g., the context of the school) and the innovation itself are in a dynamic relationship. Implementation is at the center of the question of functional ESD governance.

Transfer refers to the transfer of the innovation to a new context, for example, at the school level [45]. At the end of the transfer process, the innovation can be structurally anchored or, more broadly, integrated into the target area [44]. The status of implementation reflects the degree of integration of ESD.

Governance describes the constellation and relationships of actors that are not hierarchically divided into (state) managers and those whom they manage, but rather are viewed as reciprocal drivers [35,44,45]. Coordination of action is understood as (re)acting on the actions of others [46]. Governance analysis can be used to analyze how the coordination of action among actors works and where and why it does not work [35]. Frictions here mean precisely these obstacles or innovation difficulties [47]. A distinction can be made between a normative–prescriptive and analytical–descriptive perspective on governance [48], which was taken into account in the interview guide for this study.

3.2. Research Question

The research question is differentiated into the following areas:

1. How do the stakeholders (a) understand the concept and objectives of ESD and (b) perceive the status of implementation at the various system levels?
2. How do key stakeholders report on the ideal of effective governance for the implementation of ESD?

The effectiveness of governance, involving the objective of and specific measures for the implementation of ESD, is contingent on the stakeholders themselves. Recognizing the varying professional backgrounds among the stakeholders, the analysis of their perception of the concept and objectives, as well as the status of implementation of ESD, is, therefore, relevant for the interpretation of their views on ideal governance.

4. Methods

This exploratory qualitative study adopts a cross-system-level perspective by addressing the research questions through interviews with actors from various areas of education, some of which have received minimal investigation.

4.1. Data Collection and Survey Instrument

The data was collected using semi-standardized problem-centered narrative interviews [49]. The exploratory qualitative approach enables a comprehensive representation of the diverse actors' perspectives on the research questions. Simultaneously, the use of ad hoc questions allows for in-depth exploration of relevant aspects that emerge during the interviews.

The semi-structured interview guide was developed through an iterative process between the study's authors. It included questions on (1) an assessment of the current relevance of ESD in educational processes, schools, and the school system; (2) currently perceived efforts to integrate ESD in these areas; (3) reasons for the varying degrees of progress in implementation; (4) measures conducive to the integration of ESD; (5) causes of inertia or friction in the system; and (6) further information relevant to our research question. Question (2) refers to the analytical perspective on the governance of ESD implementation,

and question (4) refers to the normative perspective on governance, as seen through the eyes of the interviewees.

The interviewees' answers are based on experiences from their professional and private environments, as well as assessments of future developments. The interviews were conducted and recorded via Zoom in August and September 2023 and lasted between 30 and 50 min.

4.2. Data Analysis

The interviews were transcribed using the AI-based software f4x. The transcripts were reviewed and analyzed with Qualitative Content Analysis using the MAXQDA 2022 and 24 software. The code scheme shown in Table 1 was formed deductively based on the research question and the literature (see theoretical framework). In order to distance ourselves from the text material, the transcripts were paraphrased according to Mayring [50] and then analyzed according to Rädiker and Kuckartz [51]. The anonymized sources are linked to the corresponding interview number in brackets throughout the text.

4.3. Sample

Stakeholders from different federal states and with different roles in the multi-level system were interviewed in order to obtain a comprehensive and practically relevant view on ESD governance. The twelve people surveyed in eleven interviews were intentionally selected from the four federal states of Bavaria, North Rhine-Westphalia, Saxony-Anhalt, and Schleswig-Holstein. The selection of these states was made on the basis of their diverse characteristics, with the selection criteria being fulfilled across several dimensions. Geographically, they are spread across the south, west, east, and north of Germany, thus offering a variety of regional perspectives. With regard to population, the selection includes two large states and two smaller ones, each of which faces distinct demographic challenges and opportunities. Furthermore, each state has different central coordinating bodies, such as ministries or agencies, with varying levels of stakeholder engagement in leadership roles. The states also differ in their approaches to implementing ESD, with variations in the incorporation of specific ESD strategies or general sustainability strategies within their legal frameworks. Additionally, there is heterogeneity in terms of their certification, quality management systems, advisory mechanisms, and the prioritization of ESD within policy agendas. An overview website provides detailed, state-specific information regarding the background to ESD and the strategies adopted [52].

Participants were found through internet searches and recommendations and were selected based on specific inclusion criteria focusing on their role within the education system, experience with and involvement in ESD, and their proximity to school practice. This ensured a variety of perspectives on ESD implementation challenges and strategies (see Table 2 for details). The selection prioritized individuals actively engaged with ESD initiatives, ranging from administrative officials to educators directly involved in school-level practices.

The heterogeneity among actor-level and local contexts allows for a broader exploration of ESD governance across diverse contexts, enhancing the study's applicability and relevance. Given the exploratory nature of the study and its objective to obtain rich qualitative insights, a small sample size was deemed sufficient for achieving depth in understanding rather than breadth in representativeness. Without quantitatively achieving saturation of information due to the constrained sample size, the diverse backgrounds and roles of the participants provided a multifaceted view that is valuable for interpretive analysis. As such, the results are presented in a qualitative manner rather than quantitatively compared.

Table 2. The interviewees worked in the federal states of Bavaria, North Rhine-Westphalia, Schleswig-Holstein, and Saxony-Anhalt. The order in the table of the federal states is randomized for anonymity reasons. The persons worked in ministries of education and cultural affairs (from ESD responsibility to management level), in state institutes (from ESD responsibility to management level), in the management level of an association, and in school practice (from school management to management level of ESD projects). The number after the position corresponds to the number assigned to the interview.

Level	Federal State 1	Federal State 2	Federal State 3	Federal State 4
Ministry		Management level (3)	ESD responsibility (2)	Management level (7)
State institute	Middle level, ESD expertise (6)	Management level (4; two persons together)	ESD responsibility (10)	
Association			Management level (1)	
School practice		ESD project: management level (8)	Head of secondary school (5) and primary school (9)	ESD project: management level (11)

4.4. Researcher Reflexivity

The authors, as researchers in the fields of educational leadership and environmental sciences, approached the interviews with a pre-existing understanding of ESD concepts. To mitigate potential bias, a semi-structured guide was strictly followed, and iterative discussions among the authors were conducted during the analysis phase to challenge interpretations and ensure fidelity to the interviewees' perspectives

5. Results

5.1. The Interviewees' Understanding of the Concept and Objectives of ESD

The interviewees understand Education for Sustainable Development as a cross-cutting issue with a variety of topics and areas, a fundamental task of the school of the future, and one that should not be delayed (1, 2, 5). As a key objective, ESD could provide the impetus for a fundamental reorganization of education, schools, and teaching (1) and is the core idea of sustainable development (11).

5.1.1. ESD as an Offer for Empowerment

ESD should not change behavioral dispositions or prescribe values but rather offer people who are willing and able to change in their autonomy an opportunity to carry out the transformation (5, 11). Pupils should be empowered to develop their own values based on factual information, possible actions, and their consequences, as well as to independently seek out relevant knowledge. This enables them to continue engaging with ESD topics autonomously and to make future-oriented decisions in line with the three-step model Recognize–Evaluate–Act (4, 5, 6). They should be enabled to be productive members of society, to demand their rights, and to successfully complete their education (7, 8). ESD would encourage them to lead a beautiful, resource-appropriate, and mentally healthy life (6) without fear of the future and enable socially disadvantaged children in particular to participate (7).

5.1.2. Dimensions, Pillars, and Fields of Action of ESD

According to the interviewees, a distinction can be made between the ecological dimension, with the core topics of the climate crisis and biodiversity; the social dimension,

with a focus on participation and communication opportunities for the school community; and the economic dimension, which also includes school operations, whereby the political dimension, which deals with topics such as civil war, peace, and legal security, was also mentioned as a potential fourth dimension (2, 5, 6, 11). In addition, environmental education, global learning, and participation are three central pillars (1), and lesson development, school development, and the whole-school approach (WSA) are the three fields of action of ESD (11). As an ideal and target concept, the whole-school approach (WSA) adopts a systemic perspective by integrating ESD into all aspects of school life—including parents, extracurricular partners, and learning environments, as well as school operations such as festivals and excursions—thereby positioning the school as a regional role model (2, 4, 8, 9, 10). The content is oriented toward the 17 Sustainable Development Goals (SDGs) (8), whereby the interdependence of the topics means that after dealing with one, the others are inevitably addressed as well (7).

5.1.3. Principles of ESD

Pupil participation on an equal footing with teachers, who are understood as lifelong learners, along with the promotion of democratization and self-determination, constitutes a foundational principle of ESD (1, 5, 9, 11). This includes a culture of sharing and appreciation, the adoption of best practices, and a resource orientation (4, 9). Topics are always dealt with in a multi-perspective, interdisciplinary, and global manner (2, 4, 6) with self-directed and project-oriented learning (4, 10) and a focus on the acquisition of skills (7, 11). ESD should always be reoriented by incorporating new scientific findings (2).

5.2. Positive and Negative Aspects of the Implementation Status

5.2.1. Positive Implementation at the Micro-Level

All interviewees mentioned aspects of a positive development in the integration of ESD into the education system (1–11). Progress was mentioned in the integration of ESD in curricula and also in lessons, particularly in the "key subjects" of ESD, such as geography and biology (1, 5, 6). In one federal state, an analysis showed that around a third of the curricula were already very advanced, a third were at least somewhat advanced, and a third were still not very advanced in terms of anchoring ESD (11). In terms of teachers' commitment to ESD, one-tenth of teachers at their school were very strongly in favor of ESD, according to one school headmaster. One-third were supportive, especially if there were requirements in the curriculum (5). In some cases, ESD was also implemented unconsciously, for example, in projects that correspond to the ESD concept but are not labeled as such (3, 10).

5.2.2. Successful Development at the School Level

Some schools are very advanced in the integration of ESD and generally implement the ESD requirements well (2, 5, 6). In one federal state, this number was reported to be five (2).

5.2.3. Progressive Integration into the Macro-Level

The National Action Plan (NAP) ESD [13] has contributed to a positive development, which is also reflected in the increasing relevance of ESD in school documents (11). Also mentioned are facilitating structures for the integration of ESD into the school system and political support (2, 4, 5, 8). The growing relevance of ESD within ministries of education and cultural affairs is evident in the allocation of increased resources, enhanced cross-ministerial cooperation, and a rising policy-level commitment to developing an ESD strategy (2, 3, 9, 10). The teachers' association is focusing more and more on ESD and is creating a new position for this purpose (1, 9). Numerous positive examples of (state)

programs and labels were mentioned that rewarded, made visible, and incentivized ESD efforts (1–11).

5.2.4. Limited Understanding at the Micro-Level

On the other hand, there are numerous deficits. Some projects are wrongly labeled as ESD due to a lack of understanding or an understanding limited to the ecological dimension, for example, (2, 5, 8). Other projects are implemented only sporadically and often lack sustained commitment; one interviewee described these projects as "daisy projects" (1). The transition from ESD content to ESD processes in the classroom has not yet been achieved (4).

5.2.5. Insufficient Implementation at School Level

In total, 90% of schools have not made satisfactory progress with implementation (11). There has been no fundamental change toward ESD or a WSA (2, 8):

> *This means that we are also at an experimental stage with the Whole School Approach. We are not yet early adopters. If you look at how many are actually doing it? That takes time. And it's a process that takes years if not decades. I would say we've made a start. But we have a lot of work to do to ensure that these things are put into practice*. (8)

> *I don't think we're in a phase where schools are rapidly becoming more sustainable. Or that we'll see a significant change in five years. Or that by 2030, we'll actually see the aspects of the SDGs reflected in schools. I simply doubt that. Schools are incredibly slow to change. Innovations in schools take decades to really take hold and become established, and they have to overcome many, many obstacles*. (5)

5.2.6. Lack of Comprehensive Integration into the Macro-Level

ESD has not been comprehensively integrated into the school system, even when compared to the progress made in the area of digitality in education (6, 8, 10, 11). Moreover, there is insufficient support for ESD among teachers and civil society, accompanied by a lack of ESD-related expertise within both schools and policymaking institutions (5, 10).

5.3. Governance of the Implementation of ESD in Educational Processes, Schools, and the School System

The statements made by the interviewees regarding aspects that promote and hinder the implementation of ESD in the school system can be presented concerning the real; frictional; and ideal, functional, and effective governance of ESD implementation. A contribution of this study is that previously little-noticed stakeholders, especially at the ministry level, provide new insights with their perspective on the research question. In this way, a very comprehensive picture can be drawn of governance, each from the perspective of the interviewees. As outlined in the state of research, it should be noted that different forms of action coordination exist in different sectors and that the actors can adhere closely to the existing structures or act across sectors [32].

5.3.1. Reality of Frictional Governance

According to the interviewees, the following frictions that are specific to the governance of the sectors hinder the implementation of ESD: in education politics, mainly isolated measures are formulated, often preserving what has traditionally been established. The problem of the lack of integration of ESD in schools is thereby being shifted to teachers:

> *In many places, both the children at school and the teachers are left quite alone with these problems. And that is a very unsatisfactory situation*. (8)

The top-down decisions of the ministries have little influence on everyday life in schools, while the existing hierarchies hinder a bottom-up process:

> *I'm a big fan of dialogue, and I actually believe that our communication with schools is too one-sided, so to speak.* (3)

> *This has something to do with the fact that schools and the school system are still relatively hierarchical, and only when we manage to address such issues in schools not just top-down, but also bottom-up, so to speak, will we be able to help them gain greater acceptance.* (11)

Furthermore, the Standing Conference of the Ministers of Education and Cultural Affairs (in German KMK) is characterized by a lack of agility in decision-making, which is attributed to the prevailing unanimity principle. The support system is not tailored to the needs of the schools and does not keep pace with their development. Pedagogy is also carried out separately from school operations by the local authorities:

> *Up to now, we have had a separation between the states, which are responsible for education, teachers, curricula, etc., and the school authorities [. . .], which are responsible for the operation of schools, their maintenance, buildings, etc. All findings in education, but also in sustainability research, show that this separation is actually somewhat artificial, because the design of the space, its uses, how we deal with resources, how spaces are also designed for educational purposes, etc., are all based on a great deal of educational objectives. So the school authority or the body responsible for material expenses is largely responsible for what is taught and how, and how learning is supported, even if it does not write the curricula itself. And that is why, in my view, but I am not alone in this, it is already a great challenge not to overcome this separation, but at least to overcome what constitutes the separation. And that school authorities and schools, i.e., education and authorities, pull together much, much more strongly.* (11)

The necessary competencies are not taught in teacher education due to the autonomy of academia:

> *Another area in dire need of development is teacher training [. . .] This has to do with the fact that universities are very reluctant to integrate Education for Sustainable Development into their curricula, precisely because of their autonomy.* (11)

At the same time, teacher training programs are not very present:

> *It's not mandatory. I'm not saying that I'm in favor of making everything mandatory. But it's simply part of the equation now. Teachers don't have to attend these training courses, and at the same time there's the problem that they're often not even allowed to attend because, as I said, teaching coverage is at risk in most types of schools, or actually in all of them, in my opinion.* (10)

Teachers see ESD as an additional task due to the heavy workload and a lack of understanding. Teachers are also open to ESD formats to varying degrees due to typical subject-specific teaching methods:

> *Of course, it always comes down to the capacity of teachers or other school staff who have to implement these measures. I think we are asking a lot of people who already have a full workload when we burden them with this whole development.* (4)

> *I think it's often this lack of information and then this additional hurdle, at least in terms of the idea.* (9)

> *And teachers are extremely stressed in the current situation because the conditions of school education are so problematic. And then the opportunities offered by the concept are simply not seen, and you try to cope with everyday life, look for other priorities, and then. . . Ultimately, it's also a question of resources, of course.* (11)

In addition, socially disadvantaged pupils, in particular, did not meet the minimum standards and were at risk of being left behind by innovative teaching formats. Due to these and other problems, they were less able to develop visions for the future and showed little willingness to engage with school:

> *We have [. . .] a quota of students who are at risk of poverty [. . .] And we have to do ESD for them. But they actually have completely different problems with their families. They have to figure out how to get through the next day. They can't develop strategies for the future*. (7)

> *And we also know that open teaching formats and projects are really good, especially for high-achieving students from secure backgrounds, and that we then leave the others behind [. . .] who sit there with their stomachs growling. So it's complex*. (7)

> *I actually have the feeling that the young people we work with are less willing to commit to anything. And that's why not everything we want to do there is successful*. (8)

With its persistent attitude, civil society supports the prevailing inertia, is skeptical about ESD, or is polarized in its opinion:

> *And I mean, from a societal perspective [. . .] here in Germany, this issue has actually been pushed back into the background [. . .] I have the feeling that people are a little tired of the topic again*. (2)

> *And we also have a significant proportion of society, ranging from those who question or deny human-caused climate change to those who simply do not believe that now is the time to do more for sustainability than has been done in recent decades. And this polarity, if you will, is also reflected in the discourse at our school*. (5)

All this leads to schools being overwhelmed and a backlog of innovations in teaching:

> *Because we haven't yet integrated too much from the past. [. . .] But that's how it is, and it shows me that we are so stuck in the past, clinging to old principles, methods, goals, and even teaching styles that simply don't allow for such things*. (1)

5.3.2. Ideal of a Functional Governance

This governance, characterized by frictions, can be contrasted with the interviewees' ideal: education politics shows the will for major reform with a holistic approach toward ESD:

> *I believe that big things have to be done from above. That means reform from above. It has to be initiated by politicians. Simply hiring someone and saying, "Now we have a little bit of ESD in the ministry," doesn't really work either*. (8)

The KMK is also clearly in favor of ESD. The ministries make ESD omnipresent in schools and, at the same time, support their demands by providing the necessary resources:

> *But the point is always the same. Compelling mechanisms must be created in some way so that the technical side of things is also addressed*. (11)

> *And I think that if pressure is applied in this way, it will, so to speak, enter the system and bring about change. So my goal is, so to speak—pressure sounds very harsh, but that's basically what it is—to indirectly show schools from several sides that this issue is important. Please move in this direction, because I can't really instruct them to do so. I would have to instruct them to do too many other things. But the point is that there is a legal framework for it. You actually have to do it. We want it too. We are investing resources in a counseling network, we are creating special programs where there are even prizes, etc., so that people realize, "Oops, I can't get around this issue somehow"*. (2)

The support system provides schools with low-threshold materials, picks up on their developments, and enables them structurally:

> *And we are increasingly no longer the ones who produce the ideas. We can produce ideas, but most of the time, the ideas that are produced collectively or by a school are already recognized as being good. And we can create the structures that enable successful exchange.* (4)

The local authorities also provide unbureaucratic funding. Academia, being responsible for teacher education, provides knowledge-based impulses for school practice:

> *Because we want to do things based on evidence and science, because we can't figure everything out ourselves, because our own experience isn't enough, because we can't do things based on our own arrogance, but because it's naturally about being as good as possible and using the scientific research results that are available on these topics.* (8)

> *I think it would be very cool if we could also network more with experts, universities, technical colleges, etc..* (10)

Teacher training programs are geared toward the interests of their target group and serve these interests:

> *I see the point that we need visibility first and foremost, and secondly, a focus on interests or needs. In general, I think that what has now become established in the business world, and I believe also in more conservative companies, this UX design, this user-oriented approach, is also important for education and for teacher training, and please, professionally and with as much leverage as possible.* (10)

As a result, teachers are equipped with the necessary skills for ESD and deal with it in an integrative and committed manner:

> *Teachers who are enthusiastic and willing to invest a little of their time beyond their teaching obligations in this topic. I believe that this is one of the prerequisites for real change in schools.* (2)

> *And there also needs to be competence building among colleagues so that they accept this, appreciate it, and not just tolerate it, but are sympathetic to it and also see the opportunity that lies in the fact that we, and I'm going to say diverse, work with so many different people, with so many different skills, because it simply improves the result when it's not just one person deciding, like me or a committee of nine people who are all over 50, but when we set it up in a whole school approach, whole institution approach format, so that young people who are 16 years old can also contribute to the decisions and, in the end, can also raise their hands at the table and vote on whether we should do it.* (8)

Pupils appreciate the value of ESD, participate in decisions, and thus relieve the burden on teachers:

> *We also do this because we want to empower these people to contribute to decisions that need to be made at a coordination level and to be part of the decision-making process themselves. This means that they also have a voice, and this requires competence building, because pupils are not used to thinking in terms of such systems.* (8)

> *When I see this in the pupils and their enthusiasm, these are the moments that give me the energy to get through my school day and keep going.* (9)

Civil society is demanding more ESD from all sectors:

> *But of course, this had to come from the stakeholders themselves. We cannot dictate this. [. . .] It has to come from us, it has to come from the students, it has to come from within, from the scientists, from the university lecturers, it has to come from society. And there are still major shortcomings in this regard.* (11)

The school can be seen as a role model for the region and educational landscape, and passes on ideas to other schools. These schools take up the impulses and the state requirements and develop them further by looking for individual solutions. Teaching is prioritized in the process:

> *Because if we succeed in making schools model locations for sustainable development, so to speak, then this will also have an impact on [. . .] the school environment. This creates a kind of model project, which then also has an influence on civil society, etc. And if we then manage to open up schools to a certain extent and also bring in more educational partners from NGOs and the business world, not in the sense of influencing school education, but in the sense of an exchange, then schools can develop further*. (11)

An overview of these results is presented in Table 3.

Table 3. Results of real frictional and ideal functional governance of ESD implementation.

Level	Frictional Reality	Functional Ideal
Education politics	Individual measures, preserves much, shifts problems to teachers	Shows the will for major reforms with a holistic approach
KMK	Is slow to make decisions due to the principle of unanimity	Positions itself clearly in favor of ESD
Ministries	Decisions with little influence on everyday school life	Make ESD omnipresent in schools, make compelling demands, and support them with resources
Support system	Hierarchies hinder bottom-up processes	Provides low-threshold materials and takes up school impulses for structural facilitation
Academia	Does not impart the necessary competences due to university autonomy	Providing science-based impetus
Teacher training programs	Are little recognized	Oriented toward teachers' interests
Local authority	Treats pedagogy separately from school operations	Provides unbureaucratic funding
Civil society	Insists on the old, skeptical about ESD, polarized opinions	Demands ESD from schools, academia, and the entire education system
School	Overwhelmed with demands, backlog of innovations	Role model for the region, prioritizes teaching, has impulses for and from other schools
Teachers	See ESD as extra due to heavy workload and lack of understanding	Treat ESD in an integrative, competent, and committed manner
Pupils	Do not fulfill minimum standards in some cases, are at risk of being left behind by innovative teaching formats, have little willingness to get involved	Appreciate ESD, relieve the burden on teachers, and participate in decisions

6. Discussion and Conclusion

6.1. The Concept and Objectives of ESD

Other studies have also analyzed how various actors perceive and understand different aspects of ESD [18,37–40]. The views of key stakeholders on the concept and implementation status of ESD were analyzed to determine differences and accordance. The alignment of stakeholders' perceptions is considered a prerequisite for the common objective of successful ESD implementation. Günther and colleagues argue that the perceptions of ESD differ due to professional backgrounds. This itself is not a barrier; however, the danger of miscommunication exists [18].

Although the interviewees understood ESD similarly, their level of detail differed. Among our sample, those involved in educational practice, such as school personnel and association members, had the most concrete and comprehensive understanding of the concept and its objectives. The results of the study can be analyzed against the backdrop of the different approaches to ESD presented in the state of research. Different nuances in the participants' understanding became visible. Only two people, both of whom worked in school settings, mentioned aspects of ESD 2, which emphasizes critically questioning values and guidelines related to sustainable development:

> *And what we as a school do not do at all is try to actively change behavioral dispositions. That is a barrier. So we want to show students possible courses of action, consequences, the basis for decision-making, and facts. We also show them ways in which they can research information independently, and this should form the basis for a debate on values and for each individual student's concept of values, but we do not dictate this; that is where we draw the line.* (5)

> *Education for Sustainable Development should not be seen, as some may view it, as a tool with which we can now change society through education, so to speak, but rather we are part of our society. And if society is willing and able to change, then it should try to do so through ESD. But we don't have an understanding, and that's always a bit of a problem in the area of state and educational administration; we don't have a functional understanding of education. That would also contradict the educational standards of school education. If we say, for example, that ESD has the task of conveying certain attitudes and behaviors and is measured by how these behaviors and attitude changes take place. We do not have this understanding of ESD at all. Instead, Education for Sustainable Development, just like education in general, aims at the autonomy of learners. Ultimately, we are dependent on whether we can convince the learners.* (11)

The remaining aspects mentioned by the interviewees were most closely aligned with ESD 1. Interestingly, none of the responses represented an ESD 3 approach. It must be noted that this is a very recent proposed concept, even within academia. This leads to the conclusion that the idea of ESD as the empowerment of learners to contribute to sustainable development prevails among stakeholders in the German education system, apart from a few practitioners who mentioned the aspect of critical questioning.

Additionally, a comparison of the answers to the overview presented by Tilbury [30] revealed differing focus areas: aspects of "collaboration and dialogue" are first mentioned by people from institutes, particularly about extracurricular learning locations; people from school practice mention the relevance of communication at eye level, the culture of sharing, and mutual appreciation; and intercultural aspects were not mentioned by anyone. Secondly, the fact that ESD processes affect the "whole system" is emphasized by all levels; this aspect appears to be very clear. Thirdly, innovations at the level of "curricula as well as through teaching and learning experiences" are emphasized in the form of innovative teaching development through school practice and, in particular, the

association person; people from institutes and school practice mention the innovation of teaching methods and curricula in aspects of the implementation approach; all actors mention new learning settings. Finally, processes of "active and participatory learning" are again mentioned by actors from associations and school practice under the keyword participation. When interpreting these results, it is important to keep in mind that the interviewees were chosen because of their connection to ESD, so they most likely have a better-than-average understanding of it.

6.2. The Implementation Status of ESD

The summarized responses provide information on how stakeholders in education currently perceive the implementation status. The results illustrate how much effort is needed to catch up—despite some progress through national and regional strategies and at individual schools. In particular, the holistic implementation throughout the school system and the status of ESD at the vast majority of schools are far from the interviewees' ideal. This is in line with existing studies [14,53] in which ESD is not considered to be integrated deeply or comprehensively enough. Similarly, it was found that experts attribute a generally "slow and selective" implementation process [54].

Interestingly, a trend in the answers emerges: the closer the interviewees' work is to school practice, the more critical their perception. Those in higher positions in state institutes or ministries tend to emphasize the positive aspects of the implementation status more, whereas those from school practice generally mention positive developments while being very critical of a holistic implementation and describe it as not satisfactory at all.

6.3. The Governance of ESD Implementation

Several aspects of the identified frictions in real governance, as well as the defined ideal mode, can be discussed in the context of other studies [35,36]. Firstly, the prevailing politics have been identified as defensive in terms of their intra-sectoral coordination of policy action, which aligns with our results. However, if the potential for comprehensive problem-solving in ESD is recognized, new cross-sectoral structures could be established [35].

It is further asserted that ministries have, on the one hand, been unable to fulfill their responsibility to provide a legitimate and systematic framework for efforts in school practice [36]. On the other hand, the administration was already perceived as playing a creative role in implementing ESD because it initiatiated processes across sectors of the education system [35].

Academia has been shown to exhibit a descriptive rather than a solution-oriented pattern, supporting our findings. Acting transformatively, these actors seek to collaborate with social actors in order to identify knowledge-based solutions to sustainability issues [35]. This approach is intended to meet the demand for more transdisciplinary research [55–57].

The present study adds to the findings on the coordination of action of teachers, who were found to tend to adhere to their structures and, therefore, follow existing guidelines. Ideally, they would be able to interpret their functions more creatively, enabling them to shape independently and proactively [35]. The findings on subject-specific openness for ESD are confirmed by Borg and colleagues [58].

Civil society can act either as an autonomous entity, advocating for the implementation of ESD as a corrective to government action, or as a partner, contributing innovative ideas [35]. These actions would support our ideal governance of ESD.

6.4. A Professional, Profound, and Persistent Strategy for ESD Implementation

Synthesizing the findings of this study, the following thesis can be formulated: a clear and shared mulit-level strategy is essential for successful implementation. It fosters a consistent and coherent approach among all stakeholders, leading to a high degree of

quality and impact. Clear objectives and means that include time frames and methods for measuring progress are required. In this context, a top-down governance approach appears to be particularly recommendable, given that some schools tend to react positively to directives and policies issued by government bodies [54]. Additionally, this approach acknowledges the central role of government actors, as it was suggested that the influence of schools as stakeholders in the ESD implementation process may have been overestimated [59]. This implies a multi-level approach addressing the national ministry level, state and district level, school organizational level, subject and year group level and classroom level. Notwithstanding, additional lean management and bottom-up approaches have also to be implemented to demonstrate context possibilities as well as constraints and promising practices.

This multi-level strategy needs a professional, profound, and persistent implementation. Professionality implies competencies with knowledge and understanding, skills, and abilities [60,61] across all system levels. This includes personnel capacities and material equipment, as well as fiscal resources through appropriate allocation at the school level [62]. Professionality encompasses multiple aspects. Complex thinking was identified as one key skill in facilitating sustainable transformation [63]. The utilization of new technologies, foremost AI, offers additional potential for support [64]. Most studies focus on teachers' competencies. Dealing with student personalities in particular is an essential skill for successful teaching [65]. Furthermore, the results of this study could indicate the necessity of improving ESD-related competencies at levels other than the teacher's. The comparison of perceptions of ESD indicated that individuals further removed from educational practices had a less profound understanding of ESD. This thesis requires confirmation with larger sample sizes. For example, it could imply the importance of improving competencies within ministries, which could lead to clearer communication and objectives during the implementation process. This would facilitate a more collaborative governance approach based on mutual understanding rather than enforcement.

A profound action among all stakeholders needs motivation and acceptance of strategy and its aims and means. At the level of school practice, a comprehensive participatory approach is necessary, considering that the relationship between the participating actors is one key driver [59]. A large degree of cooperation and participation is required due to the openness of the concept of ESD [66], as well as the fact that only in this way can local people be heard with their thoughts, experiences, opinions, and perspectives, and thus, context-specific adaptations can be made. The latter are particularly important when a global perspective is taken against the background of the value dependency of ESD [67]. The cooperation between actors must overcome the fragmentation of the "loosely coupled" [68] educational system and lead to systemic coherence. It must be kept in mind that the whole-school approach, which many interviewees suggested as the ideal implementation strategy, is challenged by the fact that schools are loosely coupled. The implementation process is happening as a dynamic interplay between ESD as the innovation and the implementing actors and structures, and it cannot be seen as linear [54,66]. A persistent approach needs strategic control and continuous attempts at improvement.

We, therefore, suggest pursuing a combination of a top-down and a bottom-up approach [40]. Thus, all different actors at all levels recognize each other's expertise in their respective domains, fostering a win–win situation by mutual acknowledgment [66]. At the governmental level, goals are formulated, and a catalog of measures is compiled as part of knowledge management, combining both know-why and know-how, i.e., knowledge about which benefits can be generated via which measure. At the school level, the goals are made more concrete, taking into account the most in-depth understanding of ESD at

this level. Suitable measures are then implemented in a goal-oriented and resource-saving manner, depending on the situation.

6.5. Practical and Policy Implications

The following recommendations for the distinct stakeholder regimes serve as key conclusions of this study:

- The political level should promote interdepartmental collaboration among sectors such as the economy, environment, and education to ensure alignment in strategy and policy.
- Ministries of education and education authorities should refine their strategies to align with both national and regional contexts. They should offer robust support through the provision of financial resources, expertise, and personnel capacities, ensuring that schools are equipped with the necessary tools for effective ESD implementation.
- School practice, including school leadership, teaching, and non-teaching staff, should develop school-specific strategies tailored to their specific school situation. Furthermore, ESD projects should be managed in an aim- and resource-oriented way, including professional development to enhance ESD-related competences. Engaging in participatory approaches can facilitate greater cooperation among all stakeholders.
- Associations should encourage collaboration and disseminate best practice examples. In doing this, they should develop networks to support sharing resources, in particular, knowledge, to enhance the ESD implementation.
- Academia should promote transdisciplinary research, which can integrate diverse perspectives and methodologies to advance the understanding and implementation of ESD. Building on the qualitative findings of this study, further hypotheses could be developed and tested in quantitative research [69]. An appropriate sample strategy would also allow for multi-level analysis at the school organizational (schools) and school system levels (German federal states). This study served as an exploratory approach.

ESD is not just one topic among many in the broad field of education; it is an extremely important topic at the core of education, facilitating an individual yet socially responsible life. Sustainability is important for the quality of life of individuals, groups, and society, as well as in a global context.

6.6. Limitations

This study did not assess the perspective of education politicians, academia, and civil society, which could be conducted in further research. Furthermore, the differing relevance of actors for the implementation process is not quantified here. This perspective could be taken into account when defining an ideal governance of ESD. The results must be interpreted in the context of the German education system; however, the same research question can be posed in other countries, where similarities concerning ideal governance are likely to occur.

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Abbreviations

The following abbreviations are used in this manuscript:

ESD	Education for Sustainable Development
KMK	Standing Conference of the Ministers of Education and Cultural Affairs
SDGs	Sustainable Development Goals
WSA	Whole-school approach

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