

Article

Strengthening Education for Sustainable Development (ESD) Through Organizational and Structural Approaches to Continuous Professional Development: Insights from Initiatives of the District Government of Arnsberg

Anna Kapsalis * and Markus Klecker

Department of Teacher Training (CPD), District Government of Arnsberg, 59821 Arnsberg, Germany; markus.klecker@bra.nrw.de

* Correspondence: anna.kapsalis@bra.nrw.de

Abstract

The urgency of global sustainability challenges increased policy attention to Education for Sustainable Development (ESD), particularly in relation to Sustainable Development Goal 4.7, which calls for the systematic integration of sustainability competences across education systems. This article examines how organisational and structural approaches to continuous professional development (CPD) can support the institutionalisation of ESD beyond individual teacher training. The article adopts a case-based analytical approach drawing on programme documentation and evaluation data from two initiatives coordinated by the teacher training department of the District Government of Arnsberg in North Rhine-Westphalia, Germany: the Erasmus+ consortium EFFORT-A, which links international mobility with school development processes, and the regional programme WIRkstatt Zukunft, which implements the Whole School Approach through modular training and school-based consultancy. The analysis indicates that multi-level governance, structured networking, leadership engagement, and formal contracting mechanisms are associated with the integration of ESD within school cultures, curricula, and organisational routines. Challenges are identified regarding resource allocation, policy coherence, and the long-term sustainability of project-based formats. The article concludes that sustained ESD implementation requires CPD systems that combine international perspectives with regionally anchored support structures and align individual professional learning with institutional development strategies, offering recommendations for policymakers and educational leaders.

Keywords: education for sustainable development; continuous professional development; school development; whole school approach; international mobility; governance



Academic Editor: Jess Harris

Received: 10 February 2026

Revised: 16 March 2026

Accepted: 24 March 2026

Published: 2 April 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\) license](https://creativecommons.org/licenses/by/4.0/).

1. Introduction

1.1. Problem Outline and Relevance

The accelerating pace and interconnected nature of global sustainability challenges has given Education for Sustainable Development (ESD) a growing focus of educational research and policy. Climate change, biodiversity loss, social inequality, resource scarcity, and migration represent interdependent challenges that require transformations in values, thinking, and action. Education systems, as key social institutions, have been assigned

increasing responsibility for these transformations (United Nations, 2015; UNESCO, 2020; Rieckmann, 2018).

While pedagogical aspects of ESD have been widely studied, the organisational and structural conditions enabling coherent integration have received less attention (Rieckmann, 2018; Wals & Kieft, 2010). Individual teacher competence alone cannot secure lasting change. Sustainable transformation requires institutional frameworks and support mechanisms that legitimise and stabilise ESD within everyday school practice.

Schools serve as significant contexts for Education for Sustainable Development (ESD), yet the implementation is shaped by structural conditions. Traditional research identifies fragmented responsibilities, scarce resources, weak support structures, and a lack of professional development as frequently cited factors (Leicht et al., 2018; Vare et al., 2019). While pedagogical strategies are well-documented, the organizational frameworks necessary for coherent integration remain under-examined (Rieckmann, 2018).

Recent findings emphasize that individual teacher competence is insufficient without institutional legitimacy. Holst (2023) identifies a persistent “rhetoric-practice gap,” where ESD is featured in mission statements but fails to manifest as a lived principle, leaving students feeling disconnected. To address this, Holst proposes approaches that emphasize student agency to act rather than overwhelming them with the scale of global crises.

From a structural perspective, the KMK (2024) call for more systematic integration into state curricula and teacher regulations. However, the KMK underscores that success relies on local school autonomy and the establishment of permanent ESD coordinators to move beyond temporary, project-based efforts. A key objective identified in policy frameworks for the mid-2020s is achieving a “Whole School Approach,” shifting from isolated initiatives to a systemic model where sustainability is embedded in both the curriculum and the institutional culture.

1.2. State of Research and Theoretical Classification

Continuous professional development (CPD) has evolved from a secondary component of teacher education to a central element of educational policy and research over the past two decades (Avalos, 2011; Darling-Hammond et al., 2017). Current understanding conceives CPD as a lifelong and systematic process of professional learning rather than occasional participation in isolated training events, enabling teachers to respond to evolving societal expectations and changing conditions of teaching and learning (Desimone, 2009; Lipowsky & Rzejak, 2021).

International and German-language research outline several characteristics of effective professional development (Darling-Hammond et al., 2017; Garet et al., 2001; Lipowsky & Rzejak, 2021; Rudloff & Gesierich, 2025). Professional learning is most effective when it is closely related to subject-specific and pedagogical content, organised as active and collaborative learning, aligned with curricula and school priorities, and undertaken collectively by teams rather than by isolated individuals. Sustainable impact further depends on long-term engagement with iterative cycles of implementation and feedback, as well as on structured follow-up support that connects training activities with everyday classroom practice.

Empirical studies also highlight barriers that limit participation and transfer. Richter et al. (2018) identify individual obstacles such as time constraints and perceived irrelevance, as well as school-level factors including limited administrative support and weak cultures of collaboration. These findings demonstrate that high-quality programmes alone are insufficient; effective CPD requires organisational conditions that enable participation and application. Nevertheless, many systems continue to rely on individualised models in which teachers attend courses without systematic integration into school development (Kennedy, 2016; Richter et al., 2018). Such approaches neglect the fact that teachers act

within institutional cultures, decision-making structures, and resource frameworks that shape their practice to great extent (Fullan, 2016; Wullschleger et al., 2022). CPD must therefore combine individual competence development with organisational learning.

The relevance of this perspective can be observed in Education for Sustainable Development (ESD). ESD seeks to prepare learners for complex, interconnected global challenges and thus requires transformative approaches to teaching and learning (Leicht et al., 2018; UNESCO, 2020). Teachers need competencies that go beyond traditional disciplinary knowledge, including systems thinking, anticipatory and normative judgement, strategic action, and interpersonal collaboration (Wiek et al., 2011; Brundiers et al., 2021). Pedagogically, ESD demands the capacity to work with complexity, support authentic participation, and address value-based questions (Rieckmann, 2018; UNESCO, 2020). However, studies from Germany and internationally show that these competencies remain insufficiently anchored in teacher education and professional development (Rieckmann & Holz, 2017; Borg et al., 2012; Mochizuki & Fadeeva, 2010). Teachers frequently face overloaded curricula, lack of materials, time pressure, and unclear responsibilities (Scherak & Rieckmann, 2020).

Consequently, CPD for ESD must address organisational and systemic enablers alongside individual skills (Leicht et al., 2018; Bürgener & Barth, 2018). Schools require cultures that explicitly value sustainability, structures that integrate ESD into programmes and assessment, networks with external partners, dedicated resources, and leadership capacities for transformative processes (Rieckmann & Holz, 2017). Contemporary research therefore differentiates between individual and organisational approaches to professional development (Opfer et al., 2011). Organisational perspectives view professional learning as collective and context-bound, closely linked to school development. This orientation is reflected in current reforms in North Rhine-Westphalia, which frame CPD as a systemic task rather than an individual responsibility (MSB NRW, 2025b).

Implementing ESD can thus be understood as a comprehensive school development process that extends beyond classroom adjustments (Hopkins, 2001; Hargreaves & Shirley, 2009). Rolff's (2016) framework remains particularly influential in German discourse by distinguishing three interrelated dimensions: "Unterrichtsentwicklung", focusing on pedagogical practices and learning processes; "Personalentwicklung", addressing the professional growth of teachers and staff; and "Organisationsentwicklung", concerning structures, cultures, and governance mechanisms. This multi-level perspective is essential for ESD, as sustainability challenges require coordinated educational responses (UNESCO, 2020).

1.3. Objectives and Research Questions

Previous research has focused mainly on individual competence development, while organisational frameworks have received less attention. This article adopts a comparative case study design drawing on program documentation and evaluation data from two CPD initiatives. Rather than presenting primary empirical research with new data collection, the analysis constitutes a systematic secondary analysis of existing program monitoring and evaluation materials, combined with reflective practitioner analysis of organizational implementation processes. The contribution lies in the reflection on these cases and the derivation of transferable insights for policy and practice.

The article pursues three objectives:

1. to analyse how EFFORT-A and WIRKstatt Zukunft operationalise organisational CPD for ESD and which governance and support mechanisms are used;
2. to examine the complementarity of international mobility and regional networks for sustainable school development;
3. to derive recommendations for multi-level CPD strategies aligned with SDG 4.7.

Focusing on organisational dimensions is relevant because institutional conditions shape the capacity of teachers to act. The two initiatives illustrate how regionally coordinated structures can integrate international perspectives while maintaining local relevance.

1.4. Contextualisation of the Initiatives

The Arnsberg District Government is an intermediary administrative authority in North Rhine-Westphalia responsible for school supervision, teacher education, and quality development. As an intermediary between state policy and schools, it translates strategic objectives into practical support. The authority oversees more than 1000 schools and coordinates training, consultancy, and educational programmes, coordinating multi-level CPD. Both initiatives outlined here were developed within the teacher training the department of the District Government of Arnsberg.

In ESD and international cooperation, the district government functions both as regional steering actor and as interface to European programmes such as Erasmus+, providing the institutional basis for the initiatives examined.

North Rhine-Westphalia adopted an ESD strategy in 2016, establishing sustainability as a cross-cutting task across curricula and school development (MKULNV NRW, 2016). The National Action Plan for ESD 2017 similarly calls for structural embedding and coherent governance (National Platform ESD, 2017). The Education for Sustainable Development guideline (MSB NRW, 2019) specifies how ESD should be implemented in schools by focusing on ten related subjects and outlining a school development plan for sustainable development. Since 2025, North Rhine-Westphalia has also had a common understanding of the whole school approach, enabling consistent action in this area at all levels of education administration (MSB NRW, 2025a).

Research nevertheless indicates that school implementation often remains fragmented and project-based (Holst et al., 2020). Structured CPD and organisational frameworks are often lacking. EFFORT-A and WIRKstatt Zukunft are designed to address this gap by creating embedded CPD structures.

Erasmus+ enables teachers to engage in training and job shadowing across Europe to support professionalisation and internationalisation (European Commission, 2021). Mobility can broaden perspectives and enhance intercultural competence (Bürgi & Tröhler, 2018), yet effects often remain individual unless integrated into school development (European Commission, 2019). EFFORT-A addresses this transfer challenge through consortium structures and consultancy linking mobility with institutional learning.

Both initiatives are embedded in established governance frameworks. EFFORT-A utilises Erasmus+ infrastructure for regional development, while WIRKstatt Zukunft builds on local networks and partnerships. They demonstrate how regional authorities can connect international programmes with school development. Detailed program information is available online: EFFORT-A consortium documentation at <https://www.bra.nrw.de/-6006> (accessed on 13 February 2026); WIRKstatt Zukunft resources at <https://www.bra.nrw.de/-5077> (accessed on 13 February 2026).

2. Conceptual and Analytical Framework

Continuous professional development is increasingly recognised as an important factor in enabling education systems to respond to complex challenges such as those articulated in the Sustainable Development Goals. In the context of Education for Sustainable Development, CPD plays a crucial role in equipping teachers not only with knowledge and pedagogical skills but also with the capacity to embed sustainability values and competencies across whole-school practices (UNESCO, 2020; Rieckmann, 2018). While much of the existing literature has focused on individual teacher learning, the systemic integration

of ESD would benefit from greater attention to organisational and structural approaches to CPD.

From this perspective, CPD needs to be understood as a multi-level process that combines professional growth at the individual level with supportive frameworks at institutional and governance levels. The following dimensions are useful for analysing CPD in the context of ESD:

- Leadership and governance: the ways in which school leadership and regional or national authorities embed sustainability within strategic planning, decision-making processes, and institutional visions.
- Institutional culture: the extent to which sustainability values become part of everyday school practice, shaping collective identities and priorities for school development.
- Networks and partnerships: the forms of cooperation through which schools engage in local, regional, and international networks to exchange knowledge and develop professional communities of practice (e.g., focus-themed job-shadowings, barcamps, peer learning communities).
- Policy alignment and resource allocation: the degree to which educational policies, administrative frameworks, and funding mechanisms provide continuity and coherence for sustainability-oriented CPD (e.g., Erasmus+ funding, professional development funds from ministry of education).

These four dimensions make it possible to move beyond a narrow focus on individual teacher competencies and to examine how organisational structures and systemic arrangements correlate with observed patterns of ESD.

The two initiatives were selected because they represent complementary approaches to CPD for ESD, one emphasising international mobility and cross-border collaboration, the other focusing on regional governance and institutional anchoring. Both initiatives seek to promote sustainability not only in classroom practice but also within school development processes, leadership structures, and educational governance.

2.1. EFFORT-A

The EFFORT-A consortium coordinated by the District Government of Arnsberg seeks to embed international mobility and European cooperation as systematic drivers of school development across six priority areas: digital transformation, dealing with diversity, subject-specific teaching development, heterogeneity, democracy development, and Education for Sustainable Development. Among these, ESD has emerged as the focus most frequently selected by participating schools (19 out of 55 schools). Rather than treating mobility as an isolated activity (training courses or job-shadowings abroad), the initiative aims to integrate international perspectives into long-term pedagogical and organisational change across all thematic priorities. Schools working in EFFORT-A participate in the project for a minimum of three years where they are counselled by two school development trainers through a minimum of a contract training, an intermediate report and a final report to work on their main focus aim (e.g., ESD). At the end of the three years, they can be acknowledged with the certification of “School for International School Development” by the district government.

The conceptual framework for the evaluation of EFFORT-A is based on Design-Based Research, an approach that links research and school practice through iterative cycles of analysis, design, implementation, and evaluation (Schmiedebach & Wegner, 2021). This approach is especially appropriate for complex innovation processes such as international school development, as it enables continuous adaptation to local contexts while generating practice-oriented knowledge. The overall objective is to support schools in using international experiences for pedagogical, organisational, and professional learning, thereby establishing internationalisation as a structural component of sustainable school development.

The process has been ongoing since 2022 within the Erasmus+ framework and involves several cohorts of participating schools from the district of Arnsberg. Scientific monitoring by FernUniversität in Hagen accompanies the initiative across these cohorts, documenting developments, analysing implementation processes, and incorporating feedback directly into the further design of the programme¹.

Implementation is examined at several interconnected levels. At programme level, the evaluation considers how EFFORT-A is positioned within Erasmus+ and to what extent European priorities such as inclusion, sustainability, digital transformation, democratic education, and international cooperation are addressed. At school level, attention is given to decision-making processes regarding mobility, school development activities, and internal governance structures. At individual level, the focus lies on teachers' and staff members' experiences of mobility, their professional learning processes, and the ways in which these experiences are translated into everyday school practice.

The evaluation is designed as formative monitoring that accompanies the initiative throughout its implementation. Data sources include interim and final reports, school documents, and qualitative feedback and reflection formats. A mixed-method approach is applied, combining document analysis with qualitative feedback in order to capture both implementation dynamics and perceived effects.

The methodological design is characterised by strong context sensitivity, close cooperation between research and practice, and an orientation towards addressing concrete challenges. Feedback is collected systematically and used to inform the ongoing development of the project.

The transferability of the findings is limited by the specific consortium context and the formative nature of the evaluation, and statistical representativeness is not the primary aim. Nevertheless, the identified success factors for international school development such as network structures and support systems and insights into the contribution of mobility to professional and organisational learning offer valuable impulses for broader policy and practice discussions.

2.2. *WIRkstatt Zukunft*

The pilot project "WIRkstatt Zukunft" (Workshop Future) coordinated by the District Government of Arnsberg was commissioned in 2021 by the Ministry of Schools and Education of North Rhine-Westphalia as a pilot implementation to support schools seeking to establish Education for Sustainable Development (ESD) as a guiding principle of school development following the adoption of state-level ESD guidelines.

The didactic concept draws on transformative learning theory (Mezirow, 1991) and represents a paradigm shift from linear "environmental learning" to systemic sustainability understanding grounded in the Sustainable Development Goals (SDGs). The programme aims to enable networked thinking and capacity to address complexity and uncertainty rather than solely transmitting factual knowledge. The overarching objective is implementation of a Whole School Approach (WSA) in which ESD is integrated holistically across school culture, curriculum, and organizational routines, with teachers transitioning from knowledge transmitters to learning facilitators.

The programme spanned two school years (2022–2024) and comprised six consecutive modules delivered primarily as in-person events to promote experiential learning and peer exchange through methods such as guided forest walks and collaborative reflection sessions. Digital formats supplemented feedback phases between modules.

The target group consisted of schools in the Arnsberg administrative district that had identified ESD as a strategic development priority. Ten schools participated, each represented by a stable team of three to six teachers or educational specialists who functioned

as internal steering groups for ESD implementation. The six modules addressed: (1) ESD learning processes; (2) future competencies and learning scenarios; (3) expanded teacher roles; (4) interdisciplinary learning; (5) networking and cooperation (local and global); and (6) the Whole School Approach as integrative framework. A summative evaluation was conducted at programme conclusion (June 2024) to assess participant perceptions of programme quality, content relevance, and reported transfer to school practice. A self-developed online questionnaire was administered via the Edkimo platform, following a mixed-methods design that combined quantitative closed questions with qualitative open text fields to capture both statistical patterns and contextualized feedback.

A four-point Likert scale (ranging from “strongly agree” to “strongly disagree”) in forced-choice format was employed to elicit clear respondent positioning. The absence of a neutral midpoint was deliberate to avoid acquiescence bias. The evaluation addressed four dimensions: (a) process quality and organizational conditions; (b) moderator competencies; (c) content relevance of individual modules; and (d) perceived effectiveness regarding transfer to everyday school practice.

Quantitative data were analysed descriptively using frequency distributions and proportions generated automatically by the Edkimo platform. Qualitative responses were subjected to manual thematic grouping to identify recurrent patterns and divergent perspectives.

Respondent anonymity was ensured through secure storage on the Edkimo platform and presentation of aggregated findings in summary reports. Raw data remain accessible for audit purposes but are not attributed to individual respondents.

The evaluation captured responses from approximately 60% of regular programme participants ($N \approx 36$ of 60 eligible respondents), representing a response rate that introduces potential selection bias. Non-respondents may differ systematically from respondents in terms of programme satisfaction, workload, or commitment. The reliance on retrospective self-assessment without triangulation through observation, student outcomes, or longitudinal tracking limits causal inference. Self-reported perceptions of transfer to practice may not correspond to observable changes in teaching or school organization.

The pilot project context and small sample size preclude statistical representativeness. While satisfaction ratings (89.5% overall satisfaction; 94.8% recommendation rate) likely reflect pilot project enthusiasm and selection effects, findings regarding systemic barriers (resource scarcity, time pressure) and structural design features (dual support model combining cross-school workshops with on-site consultancy) show consistency with broader professional development literature (Lipowsky & Rzejak, 2021) and therefore offer insights applicable to similar contexts.

Rather than offering causal evaluation of programme impact, this analysis adopts an organizational and governance lens to examine how CPD structures can be designed to support systemic ESD integration (see Table 1). The contribution lies in identifying design principles, support mechanisms, and organizational conditions associated with participant-reported implementation processes.

Table 1. Sample Composition and Response Rate.

Category	N	Percentage
Regular programme participants (eligible population)	60	100%
Survey respondents (achieved sample)	~36	60%
Non-respondents	~24	40% ¹

¹ The 40% non-response rate may introduce selection bias if non-respondents differ systematically from respondents in satisfaction, engagement, or contextual constraints. Findings should be interpreted as reflecting the perspectives of participating respondents rather than the full programme cohort.

Wirkstatt Zukunft represents a regionally anchored, intensive school development that complements the internationally oriented mobility approach of EFFORT-A. Together, the two initiatives illustrate different pathways through which multi-level governance can support organizational CPD for ESD.

3. Case Analyses

3.1. The Erasmus+ Project EFFORT-A: Organisational Anchoring of ESD Through Structured International Mobility

The Erasmus+ project EFFORT-A represents a systemically oriented approach to the use of international cooperation for school development. Unlike individualised mobility formats whose impact often primarily benefits individual participants, EFFORT-A is structured as a multilevel model that embeds European mobility experiences within school and regional development processes (see Figure 1). Among six strategic priority areas, Education for Sustainable Development has been selected most frequently, which allows schools to connect local development goals with broader European objectives. EFFORT-A operates through a governance model that connects three levels: individual professional learning, organisational school development, and regional steering by the education authority.

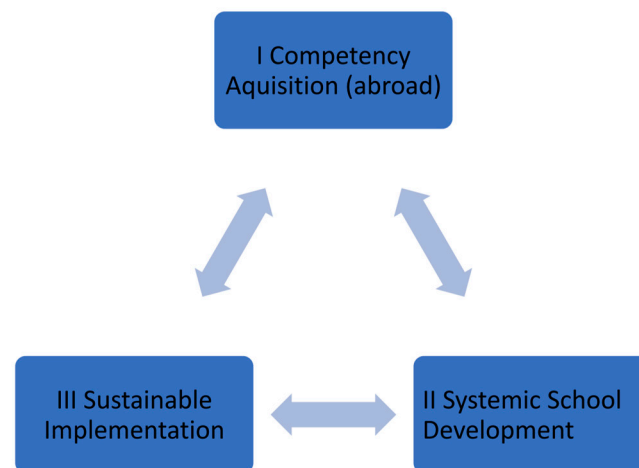


Figure 1. Guiding principle of EFFORT-A—Sustainable school development in an international context through targeted prioritization in the District Government of Arnsberg.

A central instrument is the binding contracting process, through which schools define systemic development goals, quality indicators, and concrete measures linked to mobility activities together with two school development moderators. This positions mobility as a component of institutional strategy rather than an isolated training experience. Evaluation data from the first cohort ($n = 72$) indicate acceptance of this format. Contracting discussions received an average rating of 1.6 on the German school grading scale. School development consultancy achieved scores between 3.7 and 4.0 on a four-point Likert scale. Participants described the process as providing clarity and realistic planning: “The creation of the action plan and the achievable small goals were formulated in a way that we can implement them well.”

By linking professional learning with organisational planning, the project is structured around a principle identified as central in CPD research: coherence between individual development, school improvement, and systemic governance (Avalos, 2011; Fullan, 2016). Administrative coordination by the district government is associated with reduced barriers for smaller or less experienced schools and with broader access to international opportunities.

Nineteen of the 55 consortium schools have defined ESD as a strategic priority, positioning sustainability as a structuring element of regional school development. Participation

intensity varied across consortium schools. Over the 2022–2025 period, schools conducted between 2 and 12 mobility activities ($M = 5.2$), generating between 5 and 7 participant-days abroad per school ($M = 5.5$ days). Schools defining ESD as a strategic priority ($n = 19$) demonstrated higher engagement ($M = 6.1$ mobility activities) than schools prioritising other thematic areas ($M = 4.8$ activities). Analysis of their final reports (2022–2025) documents a wide range of activities, from sustainability councils and school gardens to project weeks on global justice and student climate ambassador programmes. Participants reported positive experiences with participatory formats embedded in school culture. While these appear project-oriented in some cases, institutionalisation is visible in several dimensions:

- integration of ESD into school programmes and curricula,
- establishment of permanent sustainability teams,
- use of SDG-oriented learning materials and assessment tools,
- combination of international mobility with workshops and peer learning.

Interim reports from the second cohort ($n = 16$) indicate that 10 schools had already anchored ESD structurally through new curricular formats or permanent teams. The data suggest that EFFORT-A may function as a regional infrastructure oriented toward long-term embedding rather than short-term projects.

Mobility within EFFORT-A is understood as an opportunity for reflective learning about alternative governance and educational cultures. A job-shadowing visit to Aalborg Denmark, 2022, for example, provided an observable instance of sustainability operating as an organisational guiding principle across municipal management, schools, and civil society. Participants described participation, trust, and interdisciplinary collaboration as relevant impulses for their own contexts. Structured preparation and follow-up phases were designed to support the transfer of these experiences into school strategies through moderated reflection and transfer workshops.

EFFORT-A connects schools, regional authorities, external experts, European partners, and scientific support, a configuration described in relation to SDG 17 targets on knowledge cooperation and multi-stakeholder partnerships. Horizontal learning takes place through barcamp formats and thematic networks, while vertical coherence is pursued by feeding experiences back into regional governance. European contact seminars extend this architecture, with the aim of supporting mutual learning beyond the consortium and contributing to a broader European dialogue on ESD governance.

Sustained impact in this case is associated with organisational support rather than mobility alone. The project therefore combines consortium meetings, digital platforms, thematic networks, advisory support, and access to expertise. In the final survey ($n = 52$), Mobility & Networks received a mean rating of 4.11/5, and communication with advisors was rated 4.67. Participants described the project as a catalyst for ongoing processes: “EFFORT-A was a kickstarter for a process that is now continuing.”

Certification as “School for International School Development” is associated with symbolic recognition and may be linked to the reinforcement of institutional identity. The model combines central coordination with school autonomy, with the stated intention of supporting local ownership of goals and implementation.

The initiative also points to areas warranting further development. Coordinating a consortium of 55 schools requires substantial administrative capacity, and the current structures reflect the ongoing commitment of all actors involved. As international school development is not yet fully established as a regular task in North Rhine-Westphalia, continued clarification of roles and responsibilities may support long-term scalability. The evolving ministerial framework presents conditions under which policy coherence could be further developed and sustainable institutional anchoring could be pursued.

EFFORT-A represents one approach through which international mobility may be embedded in a structured CPD architecture to support sustainability-oriented school development. By connecting individual learning with organisational change and regional governance, the initiative suggests that multi-actor cooperation may contribute to more stable conditions for Education for Sustainable Development. Transnational encounters may serve as impulses for reflective learning associated with distributed leadership and collective responsibility.

However, such approaches depend on administrative capacity, policy legitimacy, and reliable resources. Where these are insufficient, the transfer of project innovation into sustainable routines remains uncertain, requiring critical reflection when designing frameworks to embed ESD in teacher education and school improvement.

3.2. *The Pilot Project “WIRkstatt Zukunft”: ESD as a Key Focus of School Development*

The ‘WIRkstatt Zukunft’ training concept supports schools in embedding Education for Sustainable Development (ESD) as an integral part of school development. This report analyses the program structure, networking strategies, institutional support, sustainability integration, and key actors. The program’s dual support structure and modular design initiate sustainable transformation across two school years.

The program combines cross-school training with location-specific process support through two key formats:

- Cross-school “WIRkstätten” workshops: Six full-day, skills-based training sessions over two school years led by the project team with external dialogue partners. These focus on collaborative learning, specialist input, knowledge transfer planning, and inter-school networking.
- ESD school development process: Needs-based, individually contracted support where an assigned tandem provides moderative assistance, accompanies planning meetings, facilitates internal training, and offers systemic expertise tailored to each school’s development.

The program follows six sequential modules guiding schools toward becoming holistic ESD learning centers:

Module 1: ESD learning processes

Module 2: Future skills and learning scenarios

Module 3: Expanded teacher roles

Module 4: Interdisciplinary learning

Module 5: Networking and cooperation (local and global)

Module 6: Whole school approach

Each school forms a training group of three to six teachers or specialists who act as an internal steering group for the ESD process.

The evaluation confirms high satisfaction ratings (89.5% satisfaction, 94.8% recommendation). Organization, moderation, and the two-year duration received 100% approval, providing a useful impetus for school development.

Challenges included heterogeneity among schools: advanced participants found some content redundant and tasks occasionally too vague. Future iterations must balance standardized modules with flexible formats to accommodate different development levels and increase exchange opportunities.

The cross-school workshops serve as central networking tools, offering teachers a space to exchange successes, challenges, and methods. Professional learning communities formed, with participants expressing a strong desire to continue beyond the program.

External ‘dialogue partners’ from school-based and extracurricular organizations provide strategic value by introducing outside expertise, broadening perspectives, and creating

cooperation opportunities. Partners like the ESD Agency and German Watch contributed valuable input, with extracurricular learning locations particularly well-received. The challenge now is structurally embedding these external impulses in everyday school life.

The Arnsberg district government's teacher-training department developed and implemented the project in response to schools' requests to establish ESD as a development focus. The district government provides moderator tandems who act as school development consultants, offering systemic know-how from organisational development and project management. This includes the two-year training process, cross-school workshop organization, and individual on-site development facilitation.

To have a profound impact, education for sustainable development must permeate the entire school. The strategic framework for this is the Whole School Approach (WSA). This approach does not view ESD as an isolated project or additional subject, but as an integral part of overall school and teaching development. The aim is for schools to 'exemplify at all levels how we want a sustainable society to be'. The 'WIRkstatt Zukunft' programme aims to support schools in implementing this holistic approach in the areas of teaching, school culture and school management.

The program initiated fundamental pedagogical change, shifting teachers from 'knowledge carriers' to 'learning facilitators' enabling open learning formats that encourage independent and critical thinking.

Curricular achievements: ESD was systematically integrated into curricula and elective subjects, sometimes forming the basis for new all-day concepts. Schools established innovative subjects like "project time" and "life compass" alongside participatory formats, strengthening self-directed learning.

Visible activities included ESD-themed weeks and concrete projects like schoolyard redesigns and green classrooms. Participation was broadened through strengthened student councils and parent involvement. Success was validated when one school received a Level 3 "Schule der Zukunft" award.

However, also clear obstacles emerged: colleagues and parents sometimes dismissed ESD content as "not real teaching," indicating the need for clearer communication about educational value and curricular relevance. The considerable time required to acquire funding without institutional resources creates a significant burden, risking dependence on individual extracurricular commitment rather than systematic embedding. Student "weariness with crisis issues" signals the need to shift from crisis-oriented narratives toward empowering, solution-oriented approaches.

Our analysis reveals a discrepancy between strategic need for supportive leadership and reality in some schools. "Occasional lack of support" and "lack of active participation from school management" were frequently mentioned barriers. Those challenges reported by participants undermined their teacher motivation and prevented necessary structural development.

The picture is ambivalent: "WIRkstatt Teams" were identified as an important element, committed core groups with high motivation, gratitude, and determination to anchor ESD long-term acted as effective multipliers. Inhibiting factors included general workload (time pressure, stress), initial skepticism, lack of interest or appreciation from other staff, and internal communication challenges, especially in larger schools. Despite these, the pilot project generated increasing interest not only from other schools in the Arnsberg district but also outside our region.

The concept is currently being developed into a state-wide training concept for schools in North Rhine-Westphalia, further schools will be supported from summer 2026 onwards.

4. Discussion

4.1. Interpretation of Findings in Light of Educational Theory

Grounding practical initiatives in educational theory helps to understand not only what has been implemented, but why certain elements appear to be effective. Theories of organisational change, school development, and professional learning offer reference points for interpreting the two initiatives and for assessing their potential transferability. Rather than treating EFFORT-A and WIRkstatt Zukunft as isolated projects, a theoretical perspective allows their underlying mechanisms to be made visible.

The experiences from both initiatives resonate with several established strands of research on educational change.

First, the coordinated design reflects the idea that sustainable transformation requires coherence across different system levels. The initiatives show how individual learning processes, school development, and regional steering can be connected through concrete instruments such as contracting procedures, consultancy, and network formats. This corresponds to the argument that change becomes effective when it is not limited to single actors but embedded in wider structures (Fullan, 2016).

Second, the findings support an organisational understanding of CPD. In both initiatives, professional development is not organised as isolated courses but as part of school-based processes. Teachers' learning is linked to collective goals, internal communication, and leadership decisions. This reflects the view that the capacity of teachers to act is shaped by organisational conditions rather than by individual competence alone (Opfer et al., 2011).

Third, the initiatives address the three dimensions of school development described by Rolff (2016). New pedagogical practices for ESD represent teaching development, the qualification of teams represents staff development, and adjustments in school programmes and governance represent organisational development. The cases illustrate that these dimensions need to interact if ESD is to become part of everyday school practice.

Across EFFORT-A and WIRkstatt Zukunft several factors appear to be salient (see Table 2).

Table 2. Distinctive Profile Comparison EFFORT-A, WIRkstatt Zukunft.

Feature	EFFORT-A	WIRkstatt Zukunft
Primary focus	Strategic use of international cooperation for systemic school development	Integration of ESD into school development through the Whole School Approach
Geographic scope	International with regional coordination	Regional and local with community partnerships
Core mechanism	Structured mobility linked to development goals	Modular multi year training programme
Target group	Consortium schools, teacher teams and leadership	School based teams acting as internal multipliers
Key support	Consortium management and consultancy	Cross school workshops and on site moderator tandems

A multi-level governance arrangement provides continuity between European programmes, regional coordination, and school level action. The district government functions as a mediator that translates policy priorities into practicable formats.

Formal support structures secure orientation and commitment. The contracting process in EFFORT-A and the dual support model in WIRkstatt Zukunft create predictable frameworks in which schools can plan their development.

Networking formats enable peer learning and mutual support. Regular meetings, barcamps, and cooperation with external partners expand the knowledge base of schools and reduce isolation.

The explicit connection to school development processes prevents ESD from remaining an additional project. By linking sustainability to curricula, leadership, and organisational routines, both initiatives follow the logic of the Whole School Approach.

Finally, the role of leadership is identified as important by participants at several levels: strategic guidance by the regional authority, active engagement of school management, and the distributed leadership of teacher teams.

The two initiatives pursue a shared objective but through different pathways. Their distinctive profiles can be summarised as follows:

EFFORT-A primarily opens access to international perspectives and policy learning, while WIRkstatt Zukunft offers intensive support for implementation in everyday school life. Together they demonstrate how global orientation and local anchoring can complement each other.

Both initiatives illustrate that professional development becomes effective when individual experiences are connected to organisational processes. In EFFORT-A, mobility is followed by structured reflection and planning, enabling personal insights to influence school strategies. In WIRkstatt Zukunft, participating teachers act as multipliers within their schools and are supported by moderator tandems. This interaction between personal learning and institutional change is central for the sustainable integration of ESD.

4.2. Enhancing Systemic Responsiveness to Sustainability Challenges

Systemic responsiveness represents a key capacity for contemporary education systems. In the face of interconnected challenges such as climate change, social inequality, and resource constraints, the ability of schools and administrations to adapt, to integrate new perspectives, and to develop innovative practices becomes a central indicator of long-term relevance. The initiatives in the District Government of Arnsberg offer insights into how such responsiveness can be strengthened through coordinated professional development and organisational support.

The approaches developed in EFFORT-A and WIRkstatt Zukunft contribute to the capacity of the education system to address sustainability in a more coherent way than isolated projects typically allow. Individual activities, for example environmental working groups, can be valuable but often remain peripheral to the core mission of schools. The Whole School Approach guiding WIRkstatt Zukunft points to a different direction in which sustainability becomes part of teaching, school culture, and management rather than an additional task.

Evidence from WIRkstatt Zukunft indicates that ESD is increasingly incorporated into school programmes and subject curricula, particularly in areas such as social studies and biology. Schools have begun to establish new organisational formats, including dedicated project periods and newly created learning areas, which position sustainability as a central element of student learning. These developments illustrate a movement from project-based engagement towards curricular and organisational integration.

Both initiatives also contribute to the creation of more permanent infrastructure for vocational learning, both within and outside schools. Regional networks, regular meetings, and partnerships with external organisations support the exchange of experience and

provide continuity beyond single events. Such structures help to maintain momentum in complex change processes and reduce dependence on individual commitment.

Furthermore, the evaluation points to a gradual transformation in the professional self-understanding of teachers. Movement from a role centred primarily on the transmission of knowledge towards the facilitation of learning is considered essential for inquiry based and participatory formats associated with ESD. Although this shift remains demanding, the programme design offers concrete support for developing these pedagogical practices. A further aspect concerns access and equity. Centralised administrative coordination and consultancy reduce organisational barriers, particularly for smaller or less internationally experienced schools. By assuming application procedures, financial administration, and quality assurance, the regional authority enables participation that would otherwise be difficult to realise at school level. This suggests that multi-level CPD structures can contribute to a more equitable distribution of international and sustainability oriented development opportunities.

A distinctive feature of the Arnsberg approach lies in the connection of different governance levels. EFFORT-A uses the Erasmus+ framework to link regional development with European objectives such as SDG 4.7 and SDG 17. Experiences from transnational encounters, for example, the observation of Danish practices in which sustainability is visible in municipal management and school culture, illustrate how international exposure can stimulate reflection on local structures.

WIRkstatt Zukunft complements this international orientation with strong local anchoring. The systematic involvement of extracurricular partners and dialogue organisations broadens the perspective of schools and connects learning with the surrounding community. In this way, regional coordination becomes more than administrative supervision; it functions as a hub that translates broader sustainability goals into context specific action.

4.3. Implications for Education Policy and Administration

Educational initiatives, however well designed, depend on supportive policy and administrative frameworks if they are to be sustained and expanded. The experiences of EFFORT-A and WIRkstatt Zukunft illustrate that professional development for Education for Sustainable Development is not solely a pedagogical task but also a question of governance.

The District Government of Arnsberg demonstrates the importance of an intermediate level within the education system. Positioned between government policy, educational regions, and individual schools, it acts as a bridge, translating strategic goals into operational support.

As a strategic coordinator, the authority links state level priorities, such as the ESD strategy of North Rhine-Westphalia, with concrete services for schools. This coordination helps to balance systemic steering with school-based needs.

As an administrative enabler, it reduces organisational barriers that often limit participation. By managing Erasmus+ applications, financial procedures, and reporting requirements, the authority facilitates access for schools with limited experience or resources and thereby contributes to more equitable participation.

As a provider of quality assurance, it uses instruments such as structured consultancy and contracting procedures to align activities with school development goals and to maintain professional standards.

Finally, as a network facilitator, it supports regional and international communities of practice that enable cooperation, exchange of experience, and joint problem solving. These functions show that administrative bodies can act not only as supervisory institutions but as active partners in educational innovation.

The analysis also highlights ongoing development processes within the existing framework. International school development is gradually taking shape as a field of action in North Rhine-Westphalia, with initiatives such as EFFORT-A providing important impulses. The coordination by the school supervisory authority offers a strong foundation, and further consolidation of long-term frameworks and resources would support sustainable institutionalisation.

The governance arrangements of both initiatives combine hierarchical coordination with cooperative forms of action. Schools, administrators, scientific partners, and external organisations work together in networks that reflect the partnership orientation of SDG 17. The cases suggest that ESD benefits from such multi actor cooperation, as it links pedagogical development with expertise from outside the school system.

A central feature of the approach is the balance between strategic direction and school autonomy. Top-down elements include the overall framework, quality assurance, and coordination provided by the district government, as well as the structured modules of WIRkstatt Zukunft and the contracting procedures of EFFORT-A. These instruments offer orientation and accountability.

At the same time, schools retain significant agency to define their own development goals. Teacher teams, particularly the WIRkstatt groups, act as internal drivers of change, and individual educators design projects suited to their contexts. This combination of guidance and ownership appears relevant for aligning initiatives with broader policy goals while maintaining motivation at school level. The model therefore requires continuous reflection in order to preserve this balance and to address its limitations.

5. Critical Reflection, Transferability, and Conclusions

A balanced assessment of the two initiatives requires consideration of methodological limits, contextual conditions, and remaining challenges. The case-based perspective enabled insight into concrete implementation processes and into the organisational conditions that shape how Education for Sustainable Development becomes part of school development within the District Government of Arnsberg. The monitoring of EFFORT-A and the structured evaluation of WIRkstatt Zukunft provided practice-informed knowledge directly connected to programme realities.

The findings must be interpreted with caution. Both initiatives are situated within one administrative district and reflect specific institutional constellations. The small number of participating schools and reliance on self-reported feedback limit generalisation, and satisfaction ratings do not necessarily indicate changes in teaching or learning. Perspectives of students, parents, and non-participating staff remain only partly visible. The initiatives were characterized by specific conditions such as committed regional leadership, Erasmus+ funding, and established networks that cannot be assumed elsewhere.

Transferability depends largely on organisational capacity. The initiatives relied on an intermediate governance level able to coordinate schools, provide consultancy, and maintain networks. Regions without comparable structures would need alternative arrangements. Resource intensity represents a practical constraint, as moderation, consultancy, and coordination require sustained investment. Adaptation to other contexts may require greater use of hybrid formats and cooperation with external partners.

Implementation revealed challenges typical for organisational change. Parts of school staff questioned the curricular relevance of ESD, indicating that sustainability is still sometimes perceived as an additional theme. The programmes relied strongly on committed teachers acting as multipliers, which can create risks of overload and uneven participation. Feedback suggested the need to balance problem-oriented narratives of sustainability with more empowering and solution-oriented approaches.

Research on the internationalisation of teacher education underlines that mobility requires structured reflection and curricular integration to contribute to organisational learning (Hollenbach & Schuster, 2023). The contracting and consultancy formats used in Arnsberg correspond to this insight. The analysis suggests that sustainable integration of ESD depends primarily on supportive organisational frameworks rather than on isolated training events alone. Governance arrangements, networking structures, and long-term support are decisive for translating individual learning into institutional practice. The complementary interaction of EFFORT-A and WIRkstatt Zukunft illustrates how international impulses and regional whole-school processes can reinforce each other when supported by coherent governance. The findings are encouraging, indicating multi-layered impact across individual, organisational, and regional levels.

At the same time, this organisational focus should not downplay the crucial role of individual professional transformation. Teachers' development from knowledge transmitters to learning facilitators and change agents remains a key driver of ESD. Organisational structures do not replace individual learning; they create the conditions under which personal commitment and pedagogical innovation can unfold sustainably. The initiatives therefore illustrate the productive tension between project-based innovation and systemic permanence.

Education for Sustainable Development is both a core task of education and a systemic challenge. Recommendations therefore need to address several levels at the same time. Educational policy can further anchor ESD within teacher education and secure funding beyond project cycles while clarifying governance roles. Regional authorities can act as innovation partners by balancing quality assurance with professional autonomy and by linking schools to external expertise. School leadership can strengthen distributed responsibility through formal coordination roles and visible resource allocation. Teachers remain central as change agents who gradually widen staff involvement, while teacher education providers can give greater attention to the organisational dimensions of ESD. International cooperation should combine mobility with long-term partnerships and shared policy learning.

The initiatives examined show that organisational approaches to continuous professional development can support ESD integration when individual learning is connected with school development, regional coordination, and international cooperation. Achieving SDG 4.7 requires collective commitment and systemic change, and these cases offer practical insights for further efforts in diverse contexts.

Building on the positive experiences gained, future policy can continue to enhance the institutional anchoring of international school development and to promote environmentally responsible formats for mobility (Bowden, 2026). Ongoing support for leadership and whole-school strategies will further strengthen this trajectory (European Commission, 2022). Additional research may contribute by examining long-term school-level effects and by sharing insights from different regional governance approaches.

Author Contributions: Conceptualization, A.K. and M.K.; Methodology, A.K. and M.K.; Formal analysis, A.K. and M.K.; Resources, A.K.; Writing—original draft, A.K. and M.K.; Writing—review and editing, A.K. and M.K.; Project administration, A.K. and M.K. All authors have read and agreed to the published version of the manuscript.

Funding: The APC was funded by MDPI.

Data Availability Statement: see links above in Note 1.

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

The following abbreviations are used in this manuscript:

CPD	Continuous Professional Development
ESD	Education for Sustainable Development
SDG	Sustainable Development Goals
WSA	Whole School Approach

Note

- ¹ Full report https://www.bra.nrw.de/system/files/media/document/file/evaluationsergebnisse_internationale_schulentwicklung_mit_effort-a.pdf (accessed on 13 February 2026).

References

- Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, 27(1), 10–20. [CrossRef]
- Borg, C., Gericke, N., Höglund, H. O., & Bergman, Z. (2012). The barriers encountered by teachers implementing education for sustainable development: Discipline bound differences and teaching traditions. *Research in Science & Technological Education*, 30(2), 185–207. [CrossRef]
- Bowden, R. (2026). A comparison of international teacher education mobility formats for sustainability education. In K. Wild, T. Grummel, & N. Dasouqi (Eds.), *Internationalising teacher education* (pp. 71–81). Bonn University Press.
- Brundiers, K., Barth, M., Cebrián, G., Cohen, M., Diaz, L., Doucette-Remington, S., Dripps, W., Habron, G., Harré, N., Jarchow, M., Losch, K., Michel, J., Mochizuki, Y., Rieckmann, M., Parnell, R., & Walker, P. (2021). Key competencies in sustainability in higher education—Toward an agreed-upon reference framework. *Sustainability Science*, 4, 13–29. [CrossRef]
- Bürgener, L., & Barth, M. (2018). Sustainability competencies in teacher education: Making teacher education count in everyday school practice. *Journal of Cleaner Production*, 174, 821–826. [CrossRef]
- Bürgi, R., & Tröhler, D. (2018). The making of citizens: The Erasmus programme and the Europeanisation of education. *European Educational Research Journal*, 17(4), 525–543.
- Darling-Hammond, L., Hylar, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute. [CrossRef]
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development. *Educational Researcher*, 38(3), 181–199. [CrossRef]
- European Commission. (2019). *Erasmus+ higher education impact study: Final report*. Publications Office of the European Union.
- European Commission. (2021). *Erasmus+ programme guide*. Publications Office of the European Union.
- European Commission. (2022). *Learning for sustainability in Europe's schools*. Publications Office of the European Union.
- Fullan, M. (2016). *The new meaning of educational change* (5th ed.). Teachers College Press.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? *American Educational Research Journal*, 38(4), 915–945. [CrossRef]
- Hargreaves, A., & Shirley, D. (2009). *The fourth way: The inspiring future for educational change*. Corwin Press.
- Hollenbach, N., & Schuster, K. (2023). *Internationalisierung von lehrerinnenbildung: Konzepte, formate und wirkungen*. Waxmann.
- Holst, J. (2023). *Bildung für nachhaltige Entwicklung (BNE)*. Available online: <https://refubium.fu-berlin.de/handle/fub188/40739> (accessed on 13 February 2026).
- Holst, J., Brock, A., & Singer-Brodowski, M. (2020). Monitoring progress of education for sustainable development in Germany. *Sustainability*, 12(10), 4306. [CrossRef]
- Hopkins, D. (2001). *School improvement for real*. RoutledgeFalmer. [CrossRef]
- Kennedy, A. (2016). Professional learning in and for communities. *Professional Development in Education*, 42(4), 659–679. [CrossRef]
- Kultusministerkonferenz, KMK. (2024). *Empfehlung der kultusministerkonferenz zur bildung für nachhaltige entwicklung in der schule* (Beschluss vom 13.06.2024). Available online: https://www.kmk.org/fileadmin/veroeffentlichungen_beschluesse/2024/2024_06_13-BNE-Empfehlung.pdf (accessed on 13 February 2026).
- Leicht, A., Heiss, J., & Byun, W. J. (Eds.). (2018). *Issues and trends in education for sustainable development*. UNESCO Publishing.
- Lipowsky, F., & Rzejak, D. (2021). *Fortbildungen für Lehrpersonen wirksam gestalten*. Bertelsmann Stiftung.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.
- Ministerium für Klimaschutz, Umwelt, Landwirtschaft, Natur- und Verbraucherschutz NRW. (2016). *Bildung für nachhaltige entwicklung—Strategie für nordrhein-westfalen*. MKULNV NRW.
- Ministerium für Schule und Bildung NRW. (2019). *Leitlinie bildung für nachhaltige entwicklung*. Available online: <https://www.schulministerium.nrw> (accessed on 9 February 2026).

- Ministerium für Schule und Bildung NRW. (2025a). *Der whole school approach*. Available online: <https://www.schulministerium.nrw> (accessed on 9 February 2026).
- Ministerium für Schule und Bildung NRW. (2025b). *Konzept der reform der lehrkräftefortbildung*. Available online: <https://www.schulministerium.nrw/fortbildung> (accessed on 9 February 2026).
- Mochizuki, Y., & Fadeeva, Z. (2010). Competences for sustainable development and sustainability: Significance and challenges for teacher education. *International Journal of Sustainability in Higher Education*, 11(4), 391–403. [CrossRef]
- National Platform Education for Sustainable Development. (2017). *National action plan on education for sustainable development*. National Platform Education for Sustainable Development.
- Opfer, V. D., Pedder, D., & Lavicza, Z. (2011). The role of teachers' orientation to learning. *Teaching and Teacher Education*, 27, 443–453. [CrossRef]
- Richter, E., Richter, D., & Marx, A. (2018). Was hindert Lehrkräfte an Fortbildungsteilnahme? *Zeitschrift für Erziehungswissenschaft*, 21(4), 1021–1043. [CrossRef]
- Rieckmann, M. (2018). Learning to transform the world. In A. Leicht, J. Heiss, & W. J. Byun (Eds.), *Issues and trends in education for sustainable development* (pp. 39–59). UNESCO Publishing.
- Rieckmann, M., & Holz, V. (2017). Verankerung von Bildung für nachhaltige Entwicklung. *ZEP*, 40, 4–10. [CrossRef]
- Rolff, H.-G. (2016). *Schulentwicklung kompakt* (3rd ed.). Beltz.
- Rudloff, C., & Gesierich, C. (2025). *FOOTT PRINTTS: Focus on teacher training—Practical guidelines for in-service teacher trainers: Empirical research report*. Erasmus+ Project FOOTT PRINTTS.
- Scherak, L., & Rieckmann, M. (2020). Developing ESD competences. *Sustainability*, 12(24), 10336. [CrossRef]
- Schmiedebach, M., & Wegner, C. (2021). Design-based research als Ansatz zur Lösung praxisrelevanter Probleme. *Bildungsforschung*, 2021(2), 1–10. [CrossRef]
- UNESCO. (2020). *Education for sustainable development: A roadmap*. UNESCO Publishing.
- United Nations. (2015). *Transforming our world: The 2030 agenda*. United Nations.
- Vare, P., Arro, G., de Hamer, A., Del Gobbo, G., de Vries, G., Farioli, F., Kadji-Beltran, C., Kangur, M., Mayer, M., Millican, R., Nijdam, C., Réti, M., & Zachariou, A. (2019). Competence-based training programme for ESD educators. *Sustainability*, 11(7), 1890. [CrossRef]
- Wals, A. E. J., & Kieft, G. (2010). *Education for sustainable development: Research overview*. Sida.
- Wiek, A., Withycombe, L., & Redman, C. (2011). Key competencies in sustainability. *Sustainability Science*, 6, 203–218. [CrossRef]
- Wullschleger, A., Maag Merki, K., Rechsteiner, B., & Rickenbacher, A. (2022). Wird Kooperation als nützlich wahrgenommen? *Zeitschrift für Pädagogik*, 68(6), 763–780. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.